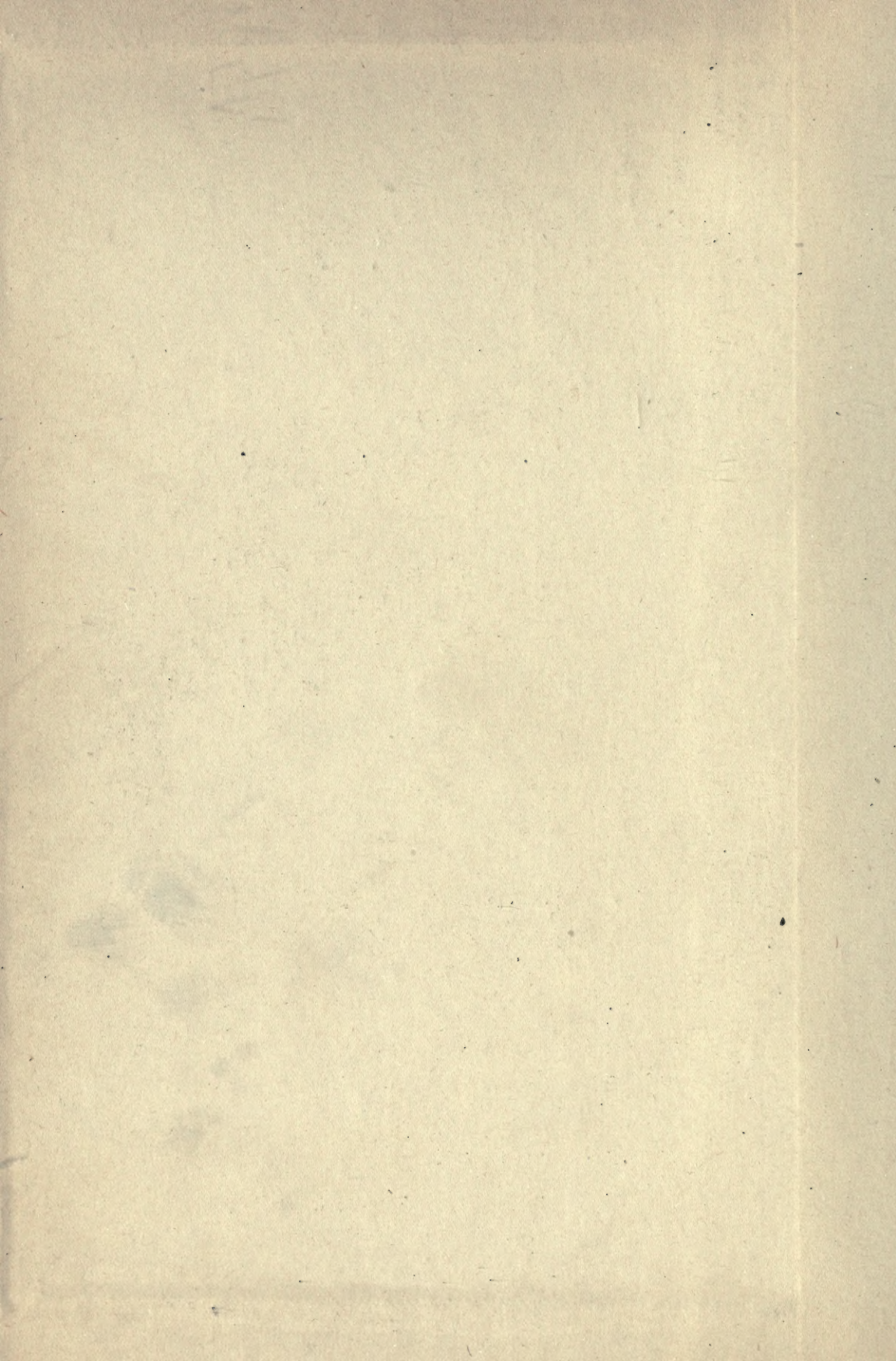


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REPRODUCTION SERIES, No. 1

COLLECTIONS
FOR
AN ESSAY
TOWARDS A
MATERIA MEDICA
OF THE
UNITED STATES

By Benjamin Smith Barton
Philadelphia, 1798 & 1804

WITH BIOGRAPHY AND PORTRAIT

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BENJAMIN SMITH BARTON, M. D.

BENJAMIN SMITH BARTON

Was the son of an Episcopal clergyman, Rev. Thomas Barton, and born in the village of Lancaster, Pennsylvania, February 10, 1766. His mother, who was the sister of the well-known astronomer, David Rittenhouse, died when he attained the age of eight years, and his father died when he was but fourteen, so that at a very early date young Barton was debarred parental care and training. His father had planned to take a trip to Europe, but died before sailing. A few years previous to leaving Lancaster, he placed his younger children, the subject of this sketch among them, with a friend in the country near the village. The love of nature, so marked in after years, was the result of his village and country life, and it is probable that this bent was furthered both by inheritance and by instruction from his father, who inclined to the study of Natural History. This is made evident from the fact that the father was a member of the American Philosophical Society, and corresponded with Linnæus on botanical subjects, as well as that he possessed, according to his son, a "fine collection of North American minerals, which was made by my father near forty years ago, at a time when he paid more attention to this part of natural history than, so far as I know, any other person in the colonies."

Young Barton developed a love for drawing at an early age, and maintained the accomplishment in after life, even becoming skilled at etching. It is said that his love of drawing and much of his instruction in the art was acquired from Major André, who was a prisoner in Lancaster.* He was very exacting in this direction, insisting that the illustrations for his books be precise and true to nature, forbidding any attempt at display by the artist for "artistic effect."

In the spring of 1780 young Barton and one of his brothers were placed in an academy at York, Pa., where he gave his attention for two years to classical studies. At the expiration of this time his elder brother, who lived in Philadelphia, took him to his home, and, during this period he attended the College of Philadelphia, which directed him towards medicine. In 1784, when eighteen years of age, he selected as a preceptor the well-known physician, Dr. William Shippen, and made a start in his life work.

Not content with medical lore derived from books, all of which at that date came from Europe, he gave his attention to the investigation of American productions. With this object in view he accompanied (1785) the commission of which his uncle, Mr. Rittenhouse, was a member, in its work of running the western boundary of Pennsylvania. Here he made the acquaintance of the Indians, and began his researches in the direction of the simples employed in

* History of the Medical Department of the University of Pennsylvania.

their medication, as well as a study of their customs and history, a work he carried on during his subsequent life, and which led finally to the publication of the "Collections for an Essay towards a Materia Medica of the United States," which work appears in full in this Bulletin of the Lloyd Library.

In further considering the life of B. S. Barton, we find that in 1786 he went to Europe as a medical student, and, excepting a few months spent in London, remained for two years in Edinburgh. While here he issued (1787) a little pamphlet titled "Observations on Some Parts of Natural History: to which is Prefixed an Account of some Considerable Vestiges of an Ancient Date, which have been Discovered in Different Parts of North America." This, his first attempt at public print, was not very creditable, being marred by some crudities and amateurish theories that very soon afterward became patent to himself. While here he became a member of The Royal Medical Society at Edinburgh, and, presenting thereto a paper on *Hyoscyamus niger*, won the Harveian prize. But, for personal reasons, he left Edinburgh before graduating, taking his degree at the celebrated German University at Göttingen in the fall of 1789. While in London he was kindly treated by both Dr. Hunter and Dr. Lettsom, who recognized his talents and scientific attainments. While here he was also elected a member of the American Philosophical Society.

Immediately on his return to Philadelphia he began the practice of medicine, and (1789) when but twenty-four years of age was elected Professor of Natural History and Botany in the College of Philadelphia, the Chair having been created with the object of acquiring his services. This was probably the first Chair in Natural History in America, although not the first in Botany. When the University of Pennsylvania and College of Philadelphia united (1791), the professorship was retained by Barton, and held by him until his death. In 1798 he was appointed one of the physicians in the Pennsylvania Hospital, which position he also held during the remainder of his life. It is evident that Dr. Barton aspired to the highest of honors, and worked tenaciously to qualify himself to receive them. Thus it was that when the celebrated Professor Rush died in 1813, Barton applied for the position, and was elected Professor of "The Theory and Practice of Medicine, and of Institutes and Clinical Medicine."

But he was not destined to do more than step into the place, make his bow, and pass away. During his early years he was often ill, being afflicted with hemorrhages and gout. During after-life he studied hard and persistently, "the pernicious consequences of his midnight and injudicious toils" sacrificing his strength and vitality. A severe hemorrhage was sustained during the time he was engaged in preparing his new series of lectures, and after delivering two courses, increasing ill health forced him to seek for relief by means of a sea voyage. He sailed for France in April of 1815, returning by way of England in November, disheartened. On landing at New York he was afflicted by hydrothorax, and detained in that city three weeks. Finally, reaching home a very sick man, he took to his bed, became rapidly worse, and was found dead the morning of December 19, 1815. And yet, notwithstanding his illness, accompanied by violent hemorrhages from the lungs, he persisted in working, and three days before

his death wrote a paper concerning a genus of plants named in his honor, which was read by his nephew, W. P. C. Barton, at the following meeting of the American Philosophical Society.

In considering the contributions to science and the work of Benjamin S. Barton, one is struck by the variety of subjects. He was "an indefatigable student and writer." He was a mutual friend of both Pursh and Nuttall, contributing much towards their success as botanists in the study of the plants of North America. Thus Frederick Pursh, in his *Flora Americana Septentrionalis* (London, 1814), credits Barton with supplying the funds which enabled him to take a botanical excursion, which he describes to the effect that he started the first of 1805, traversed the mountain chains of Virginia and Carolina, returning through the coast lands, reaching Philadelphia late in the autumn. Concerning Thomas Nuttall, Barton remarks:

"I became acquainted with this young Englishman in Philadelphia several years ago; and observing in him an ardent attachment to, and some knowledge of botany, I omitted no opportunity of fostering his zeal, and of endeavouring to extend his knowledge. He had constant access to my house and the benefit of my botanical books.

"In 1810 I proposed to Mr. Nuttall the undertaking of an expedition entirely at my own expense, and under my immediate direction, to explore the botany, etc., of the northern and the north-western parts of the United States and the adjoining British territories. Accordingly, having provided him with a *special* passport from the President of the United States, Mr. Madison, and with whatever else I deemed necessary, together with a considerable collection of manuscript queries and memoranda, Mr. Nuttall took his departure from Philadelphia in April, 1810.

"His route was by Pittsburg to Detroit, Michilimakinak, Fox River, the Falls of St. Anthony, etc. He deviated, however, from the route which had been pointed out to him, having been prevailed upon to ascend the Missouri in company with some of his own countrymen, some Americans, and others, whose objects were principally traffic.

"He proceeded to the Mikanee-town; from thence to the territory of the Mandan Indians, in the boat of a Spanish gentleman; and in the same vessel descended the Missouri to St. Louis, near the confluence of this great river with the Mississippi, in the autumn of 1811.

"Among a very considerable number of plants which he observed and collected in the course of his journey, there were two species of a genus which he observes in his notes to have the 'facies' or aspect of cactus, and which he very properly referred to the class and order of *Icosandria monogynia*—he named this genus BARTONIA. One of the species he calls *Bartonia superba*, and the other *Bartonia polypetala*. The former he found in flower in August and September; growing all the way from the river Platte to the Andes, on broken hills and the clefts of rocks—(Pursh adds, not I fear on the best authority, 'and on volcanic soil.') He speaks of it as a plant (herba) about three feet high, whose 'splendid flower expands only in the evening, suddenly opening after

remaining closed during the day, and diffusing a most agreeable odour.' It may justly rank (he adds) with the most splendid plants of either America, and very probably inhabits Mexico, if not South America.

"The other species, *Bartonia polypetala*, he describes as a perennial, growing on gravelly hills, near the Grand Detour, and flowering in August.

"In the latter end of the year 1811, Mr. Nuttall returned to England by the way of New Orleans. Previously to his departure, he transmitted to me a number of the dried specimens and seeds which he had collected. Among these there were specimens of both species of *Bartonia*, together with a good collection of seeds. At the same time he sent me a manuscript book, in which he has given pretty full descriptions of the two plants by the names which I have already mentioned; viz.: *Bartonia superba* and *Bartonia polypetala*."

That Professor B. S. Barton was a man of varied attainments is shown by the fact that his papers on every subject commanded attention the world over, and won him distinction at home. To his biography, by W. P. C. Barton, we are indebted for the following list of works from his pen:

"1. *De Hyoscyamo nigro*—the Harveian prize dissertation, before mentioned, 1787.

"2. On the same parts of natural history, etc., etc., his first work, before mentioned, published in London in 1787—octavo, about 80 pages, with an engraving.

"3. A memoir concerning the fascinating faculty which has been ascribed to the rattlesnake, and other North American serpents; first edition, octavo, 36 pages—1796.

"4. Collections for an essay towards a *materia medica* of the United States. Read before the Philadelphia Medical Society, on the twenty-first day of February, 1798—49 pages octavo.

"5. Fragments of the natural history of Pennsylvania, folio, 42 pages—1799.

"6. New views of the origin of the tribes and nations of America—octavo, 165 pages—1798.

"7. Supplement to a memoir concerning the fascinating faculty which has been ascribed to the rattle-snake, and other North American serpents, in a letter to Professor Zimmerman, of Brunswick, in Germany—octavo, 38 pages—1800.

"8. Memoir concerning the disease of Goitre, as it prevails in different parts of North America; octavo, 94 pages, 1800.

"9. Collections, etc., part first, second edition—64 pages octavo—1801.

"10. Elements of botany, or, outlines of the natural history of vegetables, illustrated by 30 plates, first edition, two volumes octavo, together 508 pages—1803.

"11. Collections, etc., part second, first edition—53 pages, octavo—1804.

"12. Facts, observations, and conjectures relative to the generation of the opossum of North America, in a letter to Mons. Roume, of Paris—8vo, 14 pages—1809.

"13. A discourse on some of the principal desiderata in natural history, and on the best means of promoting the study of this science in the United States; read before the Philadelphia Linnean Society, on the 10th of June, 1807—octavo, 90 pages—1807.

"14. Some account of the Siren Lacertina, and other species of the same genus of amphibious animals; in a letter to Mr. John Gottlob Schneider, of Saxony, with an outline engraving of the animal, from a finished drawing made by myself. Octavo, 34 pages, 1808.

"15. Collections, etc. Third edition, octavo, 120 pages, 1810.

"16. A memoir concerning an animal of the class of reptilia, or amphibia, which is known in the United States by the names of alligator and hell-bender, with an engraving; octavo, 26 pages—1812.

"17. *Flora Virginica: sive plantarum, præcipue indigenarum, Virginiae Historia inchoata. Iconibus illustrata.** Pars prima, octavo, 74 pages. Printed in 1812, and going only as far as the fourth class of the Linnæan arrangement.

"18. Elements of Botany, or outlines of the natural history of vegetables, illustrated with forty plates; the second edition, first volume. 310 pages, with an index of forty pages—1812.

"19. Additional facts, observations, and conjectures, relative to the generation of the opossum of North America, in a letter to Professor J. A. H. Reimarus, of Hamburg; octavo, 24 pages—1813.

"20. *Archæologiæ Americanæ Telluris Collectanea et Specimina*; or, collections, with specimens for a series of memoirs on certain extinct animals and vegetables of North America; together with facts and conjectures relative to the ancient condition of the lands and waters of the continent; illustrated by engravings. Part first, octavo, 64 pages—1814.

"21. Elements of Botany, second volume, in 1814.

"22. Memoir concerning the fascinating faculty which has been ascribed to various species of serpents; a new edition, greatly enlarged, and embellished by a plate; quarto, 76 pages—1814.

"23. An edition of Cullen's *Materia Medica*, with notes.

"24. Ditto first vol. Cullen's *First Lines*.

"25. *Medical and Physical Journal*.

Besides these separate works, the following is a list of his papers and memoirs, read to the American Philosophical Society, and printed in the different volumes of the transactions of that society:

"1. An account of the most effectual means of preventing the deleterious consequences of the bite of the *crotalus horridus*, or rattle-snake. *Philo. Trans.* vol. 3d, pages 14 quarto.

"2. An inquiry into the question whether the *apis mellifica*, or true honey-bee, is a native of America. Ditto, 20 pages, quarto.

"3. A botanical description of the *podophyllum diphyllum* of Linnæus, in a letter to Charles Peter Thunberg, M. D., Knight of the Order of Wasa, Pro-

* There are no plates in it.

fessor of Medicine and Botany in the University of Upsal, etc. Ditto, 14 pages quarto, accompanied with a plate of the plant to which Dr. Barton gave the name of *Jeffersonia*, in honor of Thomas Jefferson.

"4. An account of the fascinating faculty which has been ascribed to the rattle-snake and other North American serpents. Vol. 4th of the Philo. Trans. 40 pages quarto. (This paper afterwards appeared in the form of a separate work, as has been mentioned, and went through two editions.)

"5. Some account of an American species of dipus or jerboa. Ditto, with an engraving of the animal. 11 pages quarto.

"6. Observations and conjectures concerning certain articles which were taken out of an ancient tumulus or grave, at Cincinnati, in the county of Hamilton, and territory of the United States, northwest of the Ohio; in a letter to Dr. Priestley. Ditto, 36 pages quarto.

"7. Hints relative to the stimulant effects of camphor upon vegetables. Ditto, 3 pages quarto.

"8. Some account of the poisonous and injurious honey of North America. Vol. 5, Phil. Trans. 16 pages quarto.

"9. Memorandum concerning a new vegetable muscipula. Vol. 6, Phil. Trans. 3 pages quarto.

"10. Some account of a new species of North American lizard. Ditto, 5 pages quarto, with an engraving of the animal.

"11. Supplement to the account of the dipus Americana, in the 4th vol. of the transactions of the Am. Ph. Society. Ditto, 2 pages quarto.

"12. Hints on the etymology of certain English words, and on their affinity to words in the languages of different European, Asiatic, and American (Indian) nations, in a letter to Dr. Thomas Beddoes. Ditto, 13 pages.

"13. At a special meeting of the Philosophical Society, February 24, 1804, Dr. Barton was chosen to deliver an eulogium upon Dr. Priestley.

"14. In February, 1800, he read to the Am. Phil. Society an extensive memoir, entitled "A geographical view of the trees and shrubs of North America."

"15. A memoir (which gained the Magellanic premium) concerning a considerable number of pernicious insects of the United States.

"Professor Zimmerman translated into German the memoir (Transactions Phil. Society) on the bite of the rattle-snake. Also the memoir on the fascinating faculty of the rattle-snake, etc., to which last he added notes, and an introduction in the German language of 22 pages duodecimo.

"The Elements of Botany have been republished in London, and translated into the Russian language at St. Petersburg."

Professor Barton married (1797) a daughter of Mr. Edward Pennington, of Philadelphia, two children, a boy and a girl, and the mother, surviving him. The son, Thomas Pennant Barton, was "American Chargé d'Affaires at Paris, July, 1836."

Two portraits of Professor B. S. Barton are in existence, one an engraving in his biography by his nephew, W. P. C. Barton, the other being in the Philadelphia Academy of Natural Science.

The portrait we present is from the *Popular Science Monthly*, and a reproduction of that in his biography. It presents the forcible, thoughtful face of a cultured gentleman of Colonial times.

In this connection it may be well to let his nephew, the biographer alluded to, give the description of the man and his methods :

"The ardent thirst for literary fame, which strongly marked the character of Professor Barton through life, rendered him a most indefatigable student from his earliest youth. He read much, wrote a great deal, and contemplated nature with unceasing attention. His numerous publications afford, of themselves, sufficient proofs of an uncommon degree of industry ; but, besides these, he was long engaged in collecting materials for other works, and preparing some for the press ; all of which, it is greatly to be regretted, will now probably be lost to the world.

"Amidst his professional avocations, which were numerous—the duties of his station as a medical teacher, which were arduous—and a considerable portion of his time that was occupied in keeping up an epistolary correspondence with distinguished men of science,* as well in the old world as in his own country—amidst all these occupations, it is a matter of surprise, that he could have found a sufficiency of leisure for his multitudinous pursuits in literature and science : and the more especially when it is taken into view, that he was frequently impeded in these pursuits by the privation of health.

*Among the most distinguished of these are the following named :

The count de la Cépède, peer of France, etc., to whom Dr. Barton dedicated the quarto edition of his *memoir on the fascinating faculty of the rattle-snake*.

Professor E. A. W. Zimmerman, of Brunswick, in Germany.

Professor J. A. H. Reimar, of Hamburg.

Professor John Frederick Blumenbach, of Göttingen, to whom he dedicated his *memoir on the disease of Goitre*.

Mr. Thomas Pennant, the celebrated author of *Arctic Zoology*.

John Mason Good, Esq., F. R. S., etc., surgeon, of London, (well known by his poetical version of the songs of Solomon)—to whom he dedicated his *Archæologiæ Americane Telluris*, etc.

Dr. James Edward Smith, the learned president of the Linnæan Society of London, to whom he dedicated the second edition of the first part of his *Collections*, etc.

Professor Autenrieth, of Tübingen.

Mr. Tilesius, an eminent naturalist of St. Petersburg, Russia.

Monsieur Roume, of Paris, an intelligent French naturalist.

Mr. John Gottlob Schneider, of Saxony, a late celebrated writer on amphibious animals.

Dr. Patterson, of Londonderry, in Ireland.

Monsieur G. Cuvier, of Paris, the illustrious author of many learned works on organic geology, etc.

Sir Joseph Banks, Bart., the well-known liberal and munificent patron of literature and science.

Dr. John Walker, Professor of Natural History in the University of Edinburgh.

Baron Humboldt.

Professor Pallas, of Russia.

Professor Sparrman, Sweden.

Professor Thunberg, Sweden.

Professor Burmann, of Holland.

"Natural history and botany were his favorite studies,* and in his investigation of these branches of science he made a conspicuous figure. He employed much research respecting the origin of the tribes and nations of America, on which subject he has, I am persuaded, left many valuable manuscript materials. He was fond of investigating what may be termed the *antiquities* of this country; and particularly interested in zoological inquiries.

"He was a skeptic in matters of science depending on human testimony—in fact, his incredulity was astonishing. He upheld the value of skepticism in his lectures, and in one of his publications he thus expresses himself: 'Credulity is the most injurious feature in the character of the naturalist, as well as of the historian. Its influence, in one individual, is often felt and propagated through many ages. Unfortunately, too, it has been the vice of naturalists, or those who have touched on questions relative to natural history.'

"The genius of Dr. Barton was of the highest grade: it was rapid, comprehensive, and brilliant in the extreme. He was well aware of the inefficacy and fruitlessness, however, of its unaided efforts; he did not rely, therefore, on the native powers of his mind alone, great as they were, but applied himself closely to the avocations of the closet. He was not only a man of extraordinary industry, but of quick perception and various information. His genius prompted him to conceive with celerity all the varied and diverse relations of those subjects to which the bent of his mind more particularly attached him—he was, therefore, a rapid writer. He possessed a memory remarkably, nay, extraordinarily tenacious and faithful, particularly with respect to facts and chronological events. He never forgot what he once determined to remember, hence he read with great advantage; and though his reading was always desultory, irregular, and to all appearance hasty, he was able to make the most profitable use of it. He possessed a good judgment, much imagination, and a taste for the fine arts. He was indeed a man of uncommon genius and excellent professional talents.

"As a medical teacher, he was eloquent, instructive, and, when occasion called for it, quite pathetic. His voice was good, though attenuated, penetrating, and sometimes rather sharp; his enunciation clear and distinct; his pro-

* In the preface to his *Elements of Botany* he thus speaks of his attachment to these sciences: "The different branches of natural history, particularly zoology and botany, have been my favorite studies from a very early period of my life. The happiest hours of near sixteen years of cares, of difficulties, or of sickness, have been devoted to the cultivation of these interesting sciences. During this long period I have never ceased to look forward, as I still look forward, with an ardent satisfaction to the time when natural history (including botany) shall be taught as an indispensable branch of science in our University. That period, however, has not yet arrived. I have, however, the satisfaction of observing that these sciences are making some, nay, even great advances among us; and I still flatter myself that the directors of our principal American universities, or other seminaries of learning, but *in particular, the trustees of the University of Pennsylvania* (in which all the branches of medicine are taught much more extensively than in any other part of the United States), will see the *propriety*, and even *necessity*, of giving *more substantial encouragement* for the extension of natural history among us."

nunciation constrained, and his emphasis, owing to his remarkable kind of punctuation and a desire to be perspicuously understood, was studied, forced, and often inappropriate. In his lectures his diction was cacophonous and unpleasant.

"As a writer, he is ingenious, rich in facts, profound in research, and always abounding in useful information. He wanted, however, in a great degree, a talent for generalizing. Hence his various works are characterized by an egregious want of method, or perspicuous arrangement. His style, it must be confessed, is always diffuse, inelegant, and frequently tautological. As he never corrected what he once wrote, or at least but rarely, these defects in his composition were the natural consequences of his vehemence in writing. His punctuation is truly remarkable, and, for a man of his discernment and extensive reading, singularly incorrect.

"As a physician, he discovered a mind quick in discriminating disease, skillful in the application of appropriate remedies, though he certainly was a very cautious, if not timid, practitioner. No man read more extensively on the subject of diseases; in fact, he was deeply versed in pathological knowledge, derived from books. As, however, his medical practice was never very extensive, his practical observations delivered in his lectures were strikingly marked with the evidences of overweening caution. Hence he recommended to his pupils, and always employed himself, unusually small doses of medicine. He was, however, in the main, an observing and intelligent practitioner, and was remarkably assiduous in his attentions, and soothing in his behavior to his patients.

"In figure he was tall, and exceedingly well formed; in middle life he might be considered as having been handsome. His physiognomy was strongly expressive of intelligence, and his eye was remarkably fine and penetrating.*

"In temperament he was irritable and even choleric. His spirits were irregular, his manners consequently variable, impetuous, vehement. These repeated vacillations between equanimity and depression, were generally owing to the sudden and repeated attacks of his continual earthly companion—irregular gout.

"In familiar conversation he was often elegant, remarkably facetious, but never witty.

"As a parent, he was kind, tender, and indulgent to a fault.

* The best likeness extant of Dr. Barton is the fine profile, done in mezzotinto, by St. Memim (the engraving prefixed to this sketch is copied from it) when the doctor was about thirty-seven years of age. The life-size crayon profile, from which the miniature mezzotinto was taken, is also a very good likeness: it is the property of the Pennsylvania Hospital, where it now is. His portrait of *kit-kat-size*, was painted while in England, by his ingenious friend and early protégé, Mr. Jennings: this was, at the time it was taken, a good likeness. And another, in a more finished style of painting, though certainly not a happy resemblance, was painted by Mr. Rembrandt Peale, within the last two years of the doctor's life. Mr. Trott painted a fine miniature picture of him, which is in all respects, except the expression of the mouth, a most excellent likeness.

The execrable caricatures, now exposed for sale in the print-shops and book-stores, have only the most distant traces of resemblance.

"He possessed some high virtues; among the most elevated of them was his unaffected love of country. Indeed, his patriotic feelings were not only strong, but frequently expressed with unreserved warmth. He always spoke with extreme impatience of the arrogance of pretending foreigners of the literary grade, too many of whom resort to our country, being nothing in their own, and perpetually insult us by their vain and insufferable denunciations of our claims to national genius, talents, and learning."

That Professor Barton possessed not only a local and an enviable reputation abroad by reason of his labor in science is shown by the fact that he was a member of the Imperial Society of Naturalists of Moscow, the Linnæan Society of London, the Society of Antiquaries of Scotland, the Danish Royal Society of Sciences, and the Royal Danish Medical Society.

Several biographies of Professor B. S. Barton have appeared, among which the following are most prominent, being the works consulted in this study:

Biography of Dr. W. P. C. Barton, in the revised "Elements of Botany," 1836. From this work, it seems, all the other biographies, including our own, have been largely constructed.

A History of the Medical Department of the University of Pennsylvania, 1869, by Joseph Carson, pp. 126.

Sketch of Benjamin Smith Barton, *Popular Science Monthly*, 1896, p. 834 (portrait, p. 720). Our portrait is copied from this print.

The Botanists of Philadelphia and Their Work, by John W. Harshberger, Ph. D., 1899, pp. 108.

Having thus briefly recounted the part taken by Dr. Benjamin Smith Barton in scientific affairs about one hundred years ago, we may add that, in our opinion, no other man in early American medicine made a more marked and lasting impress. His were the first efforts of any American teacher to call attention to our indigenous remedies in a prominent or systematic way.

The result of his guidance is seen in the numbers of theses on medicobotanical subjects that were evolved from the University of Pennsylvania during the period of his connection with that institution, a work that still redounds to its honor and credit.

"Barton's Collections" are referred to by all who study the history of American drugs, being the first English work on the subject. Long since out of print, this is a very rare volume.

COLLECTIONS
FOR
AN ESSAY
TOWARDS A
MATERIA MEDICA
OF THE
UNITED-STATES.

*READ BEFORE THE PHILADELPHIA MEDICAL SOCIETY, ON THE
TWENTY-FIRST OF FEBRUARY, 1798.*

By BENJAMIN SMITH BARTON, M. D.

ONE OF THE HONORARY MEMBERS OF THE SOCIETY,
AND
PROFESSOR OF MATERIA MEDICA, NATURAL HISTORY, AND BOTANY,
IN THE UNIVERSITY OF PENNSYLVANIA.

“Sunt Simplicia desumpta e triplici Naturæ Regno : e Lapideo, Vege-
tabili & Animali ; heic VEGETABILIA tantum depromsi, quæ maximam
constituunt Materiæ Medicæ partem, alio tempori reservans cetera.”

LINNÆUS.

FIDEM NON ABSTULIT ERROR.

PHILADELPHIA :

PRINTED, FOR THE AUTHOR,
BY WAY & GROFF, No. 27, ARCH-STREET.

1798.

COPY-RIGHT SECURED ACCORDING TO LAW.

TO
JAMES EDWARD SMITH, M. D. F. R. S.
PRESIDENT OF THE LINNÆAN SOCIETY.
MEMBER OF THE ROYAL ACADEMIES OF TURIN, UPSAL, AND LISBON;
AND
MEMBER of the AMERICAN PHILOSOPHICAL SOCIETY, &c.

DEAR SIR,

I CANNOT expect to add any thing to your reputation, by dedicating to you the following pages. I mean not, by this act, to choose a patron who shall veil my faults, or screen me from the censure of the public critic. The actions of men, particularly perhaps of young men, are sometimes disinterested. It is with pleasure I declare to the public, how much I admire your exertions for the extension of that amiable science which both of us cultivate: you with the happiest success; I with an humble ardour.

THE age in which we live is the age of natural science. The mind of LINNÆUS has effected more than the combined intellects of all the naturalists of any preceding century. Natural history, however, is still an infant science. This is particularly the

case with respect to America. Even the *nomenclature* of our productions is extremely imperfect. We are still less acquainted with the *properties* of our productions. I view this blank in the history of science, with pain. This pain, however, is daily diminished: for something is daily added to the stock of our knowledge.

I AM far from insinuating, that what I offer you is important in its kind. I am fully sensible of the imperfections of this Essay. I could wish it were more worthy of your attention. If I succeed in convincing you, that there are some lovers and cultivators of botany in the United-States, one of my objects in writing this dedication will be accomplished.

ACCEPT of my sincere wishes for your happiness, and believe me to be, with great respect,

Dear Sir,

Your friend and humble servant, &c.

BENJAMIN SMITH BARTON.

Philadelphia,

March 12th, 1798.

P R E F A C E.

I HOPE the following pages will be received as an earnest of my desire to extend our knowledge of the medical properties of the indigenous vegetables of the United-States. I do not expect to acquire any reputation by the publication. Perhaps, in making this assertion, I shall not be doubted, when I confess that in every thing which I have hitherto published, I have had reputation in view. If I have not acquired it, I have borne the disappointment with tranquil indifference.

THE readers of these *Collections* (for every thing that is written and published solicits some readers), will form different opinions about my medical faith. Some of them will think I have too much; and others that I have not enough. I certainly do not repose implicit confidence in the half of what is said concerning the powers of medicines. Accordingly, I have not given a place in these pages to many of our vegetables which have been praised as specifics for the cure of diseases; in particular, as specifics against the bites of venomous serpents. But, on the other hand, it will be asked, whether I mean

that all the different vegetables which I have mentioned, should have a place in the *materia medica* of physicians? I answer, No. But how are we to know what plants are most proper for the purposes of medicine, until we shall have examined the properties of a great body of vegetables? The *Digitalis* is now thought one of the most important of the diuretic medicines: but perhaps future inquiries will discover a diuretic which shall, in a great measure, supersede the frequent use of this active plant. I wish to turn the attention of our physicians to an investigation of the properties of their native productions. When it is considered how little has hitherto been done in this way, every attempt (mine is an humble one) should be candidly received. I do not mean that its faults should not be pointed out.

THE arrangement of the articles which I have mentioned is by no means faultless: on the contrary, it is liable to many objections. I should not have followed this arrangement had I been considering *all* the articles of the *materia medica*. I shall give a sketch of my ideas of a method of the science, in my strictures on the arrangement of the learned and elegant author of the *Botanic Garden*, a poem which unites the fire of Lucretius with the taste of Virgil, and a learning unequalled by that of Camoëns or of Milton.

I THINK it but candid to confess, that since reading this address to the Medical Society, I have made some alterations in it. These alterations, however, are very inconsiderable. In general, even the very style and faults of each phrase are preserved, for I had not time to alter or correct much. I have left out the concluding part of the address, relative to the establishment of a medical library: not that I doubt the ability of the society to form a library of its own. The notes contained in the appendix were not read to the society.

WHATEVER may be the reception of this essay by the public, whether favourable or unfavourable, I shall pursue my inquiries concerning the nature and properties of the natural productions of my native country. I shall pursue them, because there is at least a possibility that they may ultimately tend to something useful: and because I have the experience of several years to teach me, that the cultivation of science is the extension of my happiness.

E R R A T U M.

Page 13. *For* Cornus Cincinata, *read* Cornus circinata.

COLLECTIONS, &c.

GENTLEMEN,

WE have assembled together to celebrate the anniversary of our foundation. It is an occasion which ought to give pleasure to us all. We have met, however, for the difficult purpose of mingling science with pleasure. This difficulty falls peculiarly upon me. By your vote, I have been called upon to deliver the annual discourse. I accepted of the appointment cheerfully, because I was anxious to demonstrate my attachment to the Society, of which I had the honor to be a member at a very early period of my life; a Society in which I first imbibed my love of the different sciences which constitute the great fabric of medicine.

BUT if I accepted of the appointment with pleasure, I do not address you with confidence. I have found it difficult to select a subject for your

entertainment. I, at one time, contemplated a comparative view of the different theories which have prevailed in medicine, in the present century. But I soon found this subject too extensive for our purpose: besides, in the investigation of this view, I should have been obliged to speak with a freedom, which might not have given pleasure to every one of us. Men are often attached to theories, as parents are attached to their children.

AFTER some difficulty, I have selected a subject. It is An Essay towards a *materia medica* of the United-States; or, if you please, An Inquiry what indigenous vegetables of our country may be used with advantage in the treatment of diseases. This, you will immediately perceive, is a task both extensive and difficult. But it is an important one. I shall not, perhaps, perform a duty altogether unacceptable to you, if I furnish you with a few facts not generally known to you before. This is all I aim at.

MINE is not the first attempt of this kind. Besides the paper entitled *Specifica Canadensium*,* Dr. Schoepf, of Erlangen in Germany, has favoured us with a specimen of such a work, under the title of *Materia Medica Americana potissimum regni vege-*

* See *Amoenitates Academicæ*. Vol. iv. Dissertatio lxxii.

tabilis. This work was printed in 1787. The author arranges the articles according to the sexual system of Linnæus. This, though an objection, is not the greatest. He has given us nothing from his own experience. He ascribes active powers to plants which are nearly inert, and appears to me to be, in some measure, governed by the old notion of Signatures: one of the tyrants of the ancient schools. He discovers none of that infidelity, or, if you please, scepticism, which ought ever to be attached to physicians: I mean not an infidelity relative to religion; but an unwillingness to acquiesce, without good proofs, in the truth of every tale concerning the powers of medicines. This pliant, this credulous disposition, has been one of the causes which have obstructed the regular march of medical science. But as the effort of Schoepf is the best of the kind, so we ought to tread lightly on his work. He is at least a man of learning; and learning should always claim indulgence from the lovers and cultivators of science.

I AM far from supposing that it is in my power, especially on this occasion, to supply all the defects of Schoepf's book. It would be easy to point out its faults. I aim at a rude sketch of our *materia medica*. It is so extremely unfinished, that I have no objection to its being called by any inferior name. I confine myself entirely to vegetables.

MATERIA ALIMENTARIA.

YOU are all acquainted with the great general division of the *materia medica* into two parts: that which relates to the aliments, or *nutrientia*, of mankind, and the medical part, more strictly so called. Each of these is highly important; but I mean in this address to confine myself almost entirely to the latter branch. Yet the former should claim some of our attention. Much may be expected from a country which has blessed us with the maize, the potatoe, &c. I could readily furnish you with a long list of the indigenous *nutrientia* of this country; but such a list would be very uninteresting. On this subject, however, an useful work might be written. He who shall undertake to examine the subject extensively will find, that Providence has, in the gift of esculent vegetables, been as liberal to the countries of the United-States, as to any other countries of the world, of equal extent.

UNDER this head of the *nutrientia*, I shall content myself with mentioning two native articles, which deserve the attention of physicians and others. Perhaps they may even supersede, on many occasions, the use of some other articles, which are purchased at a pretty dear rate.

THERE grows upon the river Mobile a species of palm, which is but little known to naturalists, but which promises to be an important article of food to man. It has no stalk or stem above ground. The leaves spread regularly all round, and when fully expanded are flabelliform. In the centre of these leaves is produced the receptacle of the fruit, which is of the form and size of a common sugar-loaf. This receptacle consists of a vast number of drupes, or berries, of the size and shape of common plumbs: each is covered with a fibrous, farinaceous, pulpy coating of considerable thickness. This substance is said to resemble manna in texture, colour and taste; or, perhaps, it still more resembles moist brown sugar, with particles of loaf sugar mixt with it. It is a most delicious and nourishing food, and is diligently sought after in the places where it grows. Upon first tasting it, it is somewhat bitter and pungent.*

THE large tuberous roots of the *Smilax China* afford our southern Indians a nourishing food. The fresh roots are well macerated in wooden mortars. The mass is then put into vessels nearly filled with clear water, where it is well mixed with paddles. It is decanted off into other vessels, where it is left to settle, and after the subsidence is com-

* From the information of Mr. William Bartram. *MS penes me.* Vol. i.

pleted, the water is cast off, leaving the farinaceous substance at the bottom. When this is taken out and dried, it is an impalpable powder of a redish colour. Mixed with boiling water, it becomes a beautiful jelly, which, when sweetened with honey or sugar, affords a most nourishing and pleasant food for children or aged people. The Indians sometimes use it mixed with fine corn-flour, and fried in fresh bears' oil.*

THE chemical history of the maize, or Indian corn, the blessing of our country, deserves to be farther investigated. Its importance as an article of diet is sufficiently established by the experience of whole nations.

MATERIA MEDICA.

I AM not very anxious, on this occasion, about my division of the *materia medica*. I have attempted, in my lectures, to make some improvements upon the arrangement of Dr. Cullen; and, if I live, I hope to publish, in a few months, my strictures on the late arrangement of the ingenious Dr. Darwin. At present, in possession of only a small collection of original facts immediately relative to the *materia*

*From the information of Mr. William Bartram. *MS penes me.* Vol. i.

medica of the United-States, I shall content myself with disposing of these facts under the nine following heads, viz. 1. ASTRINGENTS; 2. TONICS; 3. STIMULANTS; 4. ERRHINES; 5. SIALAGOGA, or SALIVATING MEDICINES; 6. EMETICS; 7. CATHARTICS; 8. DIURETICS; 9. ANTHELMINTICS.

SECT. I. ASTRINGENTS.

I THINK it proper, in the present state of our knowledge of medicines, to give place to a class of ASTRINGENTS. There is the more propriety for the adoption of such a class, because we see more readily, than with respect to many other medicines, their direct mode of operation. Our vegetable astringents, I mean the purer and more unmixed astringents, are numerous. The barks of all our oaks are of this kind. But I may here particularly mention three or four native astringents, which seem to be more especially entitled to your attention.

THE first is the *Geranium Maculatum*, or Spotted *Geranium*, which grows very plentifully about this city: it flowers in the spring. The root is used: this boiled in milk has been found an excellent medicine in the cholera of children. It is not necessary to be very nice about the dose. I imagine it would also prove useful in old diarrheas, where

the kino, and other astringents are exhibited. If nephritis, of certain kinds, be relieved by astringents, this geranium would seem entitled to attention, not merely because it is a powerful astringent, but because a species of the same genus, the *Geranium robertianum*, or Herb-Robert, has been employed with advantage in this distressing complaint.*

THE *Heuchera Americana* is the next astringent. This is sometimes called American Sanicle. It is more commonly called Alum-Root. The root is a very intense astringent. It is the basis of a powder which has lately acquired some reputation in the cure of cancer. I suppose all its virtue, in this case, depends upon its astringency. I may here observe, that the disease of cancer is not confined to civilized nations. It is known among our Indians. I am informed that the Cheerake cure it with a plant which is thought to be the *Hydrastis Canadensis*, one of our fine native dies. I do not believe that the *Heuchera* has cured genuine cancer: but it seems certain that it has proved very beneficial in some obstinate ulcers, which have been mistaken for cancer. In such cases, the astringent medicines are too much neglected.

* I am not certain that the *Geranium robertianum* is a native of any part of America.

THE *Actæa racemosa*, or Black Snake-root, is also a valuable medicine. It is sometimes called Squaw-root, I suppose from its having been used as a medicine by our Indians. The root of this plant is considerably astringent. In a putrid sore throat which prevailed in Jersey, many years ago, a strong decoction of the roots was used, with great benefit, as a gargle. Our Indians set an high value on it. A decoction of it cures the itch. In North-Carolina, it has been found useful, as a drench, in the disease of cattle called the murrain.

THE *Uva Ursi** is considerably astringent. Yet I suspect that it does not operate entirely by virtue of its astringent quality. This plant, from my own experience, I can recommend to you as a most valuable medicine. It should be in the hands of every physician. I have used it with advantage in old gonorrhea. But its great virtue is that of a medicine in nephritis. I am inclined to think that it is peculiarly adapted to cases of what I call nephritis podagrica, or nephritis depending upon gout. This is one of the plants which is common to the old and to the new-world. It grows plentifully in Canada, New-York, New-Jersey, &c. Schoepf says, the Indians mix the leaves with tobacco.†

B

* *Arbutus Uva ursi* of Linnaeus. † Page 68.

THE *Liquidambar asplenifolium** of Linnæus is well known by the name of Sweet-Fern. It has often been found useful in diarrhea. Other virtues have been ascribed to it.†

SECT. II. TONICS.

I BELIEVE all the astringent medicines are more or less TONIC. But there are a good many tonics which are not astringent. There is, certainly, some propriety in considering the astringents and tonics under two distinct heads, as Dr. Cullen has done. But, perhaps, the tonics should only form one section of the great class of stimulants. Certain it is, that many of the tonic medicines are considerably stimulant.

THE class of tonics is extremely interesting to physicians. It embraces some of the most valuable medicines with which we are acquainted, such as the Peruvian bark, the extensive tribe of bitter medicines, as the gentians, &c. The natural infirmities of mankind, and perhaps especially the vices to which civilized nations are so propense, will always render the tonics most necessary implements in the hands of physicians.

* *Comptonia asplenifolia* of Aiton. † See Schoepf, p. 142.

OUR woods possess several medicines which I am inclined to think might to be used, with advantage, as substitutes for the Peruvian bark. Perhaps, most of our Oaks, which are in general different from the oaks of the old-world, are of this kind. Sufficient trials have not been made with them; at least *internally* used. *Externally* some of them have been employed with advantage. I have used the bark of the Spanish oak* in gangrene, and I had every reason to think it was, in this case, equal in power to the best Peruvian bark. The bark of the *Prunus Virginiana*, or Wild-Cherry-tree, has been used in intermittent fevers, and found useful. This is a very common tree. Its leaves are poisonous to certain animals, as calves. Even the berries intoxicate different kinds of birds. The barks of the Common Sassafras (*Laurus Sassafras*) and Persimmon (*Diospyros Virginiana*) have likewise been found useful in intermittents. In the year 1793, I used the bark of the last of these vegetables in an ulcerous sore throat.† Our Willows have not been attentively examined. We have several native species, and I believe they possess nearly the same properties which have been ascribed to the willows of

* *Quercus rubra montana* of Marshall.

† Dr. Woodhouse has favoured us with some interesting information concerning the Persimmon. See his *Inaugural Dissertation*. Philadelphia. 1792.

Europe,* by Stone, Haller, and other writers. The Dogwood is a genus which seems well worthy of attention. Of this, the *Cornus* of the botanists, there are several species in North-America. The most common is the *Cornus Florida*, or Common Dogwood. I find this in every part of the United-States. It is one of our most beautiful shrubs. It flowers early in the spring, and with so much regularity, that some of our southern tribes were accustomed to name the spring season from its flowering. The bark is considerably astringent. It has long been employed in intermittent fevers. A decoction of it has also been employed, and found very useful, in a malignant fever, called the yellow water, Canada distemper, &c. which, within the last eight years, has carried off great numbers of the horses in the United-States. The ripe fruit, or berries, infused in spirit or brandy, make an agreeable bitter. Our Indians employ an infusion of the flowers in intermittents. The same infusion has been much recommended by some in flatulent cholic. I have used it as a tea.

THE *Cornus sericea*, another species, is called Red-Willow and Rose-Willow; which are very improper names. The bark of this is often mixed with tobacco and smoken by the savages. It has

† Particularly the *Salix alba*, *Salix pentandra*, *Salix latifolia*, &c.

been found but little inferior to the common pale Peruvian bark, in intermittent fevers. This species grows in wet places, on the sides of rivers, creeks, &c. and flowers in August and September. I know nothing of the medical properties of the other native species of this genus; viz, *Cornus Canadensis*, *Cornus Cincinata*, &c.

MANY years ago, Zannichelli, and of late, Cusson and other writers, recommended the bark of the *Æsculus Hippocastanum*, or Common Horse-Chesnut, as a substitute for the Peruvian bark. This *Æsculus* is not a native of America, though it thrives very well in the open ground of Pennsylvania, &c. But we have at least two native species of the same genus within the limits of the United-States.* Whether the bark of these possess the properties which have been ascribed to the *Hippocastanum*, I do not know. They deserve to be examined.

I MUST not omit to mention, under this head, the *Magnolias*. Of this fine genus, we have at least six species, viz. the *Magnolia glauca*, the *acuminata*, the *tripetala*, the *grandiflora*, the *auriculata*, and the *Fraseri*. I believe they all possess nearly one general assemblage of properties; but of this I am

* *Æsculus Pavia* of Linnæus, and *Æsculus flava* of Aiton.

not quite certain. The species that is best known to me is the glauca, commonly called Magnolia, Beaver-tree, and Swamp-Sassafras. The bark of this is an agreeable aromatic, tonic, bitter medicine. It has been used in intermittent fevers. The flowers have a powerful and to most persons an agreeable smell. It is an emanation which must be considered as a potent stimulant, or incitant. I am well acquainted with a physician in whom the newly-expanded flower evidently increased the paroxysm of a fever which came on every afternoon; and also increased the pain of inflammatory gout. This is an interesting fact. In Virginia, a spirituous tincture of the cones, or seed-vessels, of the *Magnolia acuminata*, which is commonly called Cucumber-Tree, has been used, and we are told very advantageously, in rheumatic complaints.* The bark of the root of the *Magnolia grandiflora*, sometimes called Tulip-tree, is used in Florida, in combination with the Snake-root, as a substitute to the Peruvian bark, in the treatment of intermittent fevers. The flowers of the *Magnolia tripetala*, or Umbrella-tree, have a very powerful smell. They often induce nausea and head-ache.

I AM inclined to think that the *Cortex Angusturæ*, which has lately been introduced into medical

* See Dr. Duncan's Medical Commentaries, for the year 1793. Vol. xviii, p. 445.

practice, and is so greatly celebrated as a tonic, by the practitioners of Britain, is the bark of some species of Magnolia.

THE *Liriodendron Tulipifera*, well known in the United-States, by the names of Tulip-Tree, Poplar, White-Wood, &c. is very closely allied, by its botanical character, to the Magnolias. They both belong to the same class of the sexual system, and both, I believe, possess nearly the same properties. The bark of the *Liriodendron* is sometimes used in intermittents. Many persons are of opinion, that in this case, it is but little inferior to the Peruvian bark. I have never employed it.

THE bark of the *Populus tremula*? or Aspin? has likewise been used in cases of intermittent fevers. This is a powerful tonic, and deserves the attention of the American physician. It has been found very useful, as a stomachic, in the diseases of our horses.

THE Snake-root, the *Aristolochia Serpentaria*, is one of the more stimulating tonic bitters. It is certainly a valuable medicine, in the second stage of certain fevers, after the inflammatory diathesis has been removed. It was used with great benefit, in a most malignant fever, attended with carbuncles,

which prevailed at Bristol, on the Delaware, in this state, in the years 1749 and 1753. Another species of this genus, the *Aristolochia siphon* of L'Heritier, grows in the neighbourhood of Pittsburg, and in other parts of the United-States. This is a large, climbing plant. The root has a pungent, aromatic taste, and for certain purposes is perhaps preferable to the common Snake-root.

I SHALL conclude this subject of tonics by observing, that we possess a good many of the bitter plants of Europe, which have long claimed the attention of physicians. Our Gentians have not been carefully examined. We have one species which appears to be equal to any of the officinal kinds yet known.

SECT. III.

STIMULANTS, OR INCITANTS.

THE class of STIMULANTS, or INCITANTS, is so very extensive, that in order to exhibit a methodical or natural medical arrangement of these articles, it would be necessary to consider them under a number of different heads, or sections. But this, in such a sketch as I offer you, does not appear necessary. I shall content myself, therefore, with speaking of a few of our native stimulant vegeta-

bles, under the two heads of such as are more general, and such as are more partial, or topical, in their operation.

GENERAL STIMULANTS.

I THINK that many of our different balsamic products may, with propriety, be considered under the head of GENERAL STIMULANTS, though they are certainly not the most diffusible articles of this class. Such is the resin of the *Populus balsamifera*, called Balsam, or Tacamahaca-Tree. This is a native of North-America and of Siberia. The resin is procured from the leaf-buds. This balsam is so very penetrating, that it communicates its peculiar smell and taste to the flesh of certain birds which feed upon the buds. It was formerly supposed, that the Tacamahaca of the shops was the produce of this tree. But it seems more probable that it is the produce of the *Fagara octandra*.

THE gum-resin which exudes from the Sweet-gum, or Maple-leaved *Liquidambar-Tree*, the *Liquidambar Styraciflua* of Linnæus, deserves to be mentioned. The storax of the shops is thought to be the produce of this tree: but perhaps this point is not yet quite ascertained. I am informed that the produce of our tree has been used, with advan-

tage, in diarrheas. Some of our southern Indians mix the dried leaves with tobacco, for smoking.

TO the head of stimulants I have no hesitation in referring a number of poisonous vegetables, with the properties of which we are not so well acquainted as we ought to be. Such are the *Datura Stramonium*, or James-town-weed, the *Cicuta maculata*, &c.

THE *Datura* is one of our most common plants. It is certainly a medicine possessed of useful powers. The properties of this vegetable have lately been more satisfactorily investigated by one of our members, Dr. Samuel Cooper.

WE have several native plants of the natural order umbelliferae. That described by the late Dr. James Greenway, under the name of *Cicuta venenosa*, should be carefully investigated. This, from his account, must either be a direct sedative, or a stimulant, whose first operation is very soon accomplished. It kills without inducing pain or convulsions. Perhaps the plant with which some of our Indians, when weary of life, destroy themselves, is the same. It grows in meadows, and has a root like a parsnip.

BEFORE I take leave of these poisonous plants, I may mention some others whose properties are but

little known. The first is the *Rhododendron maximum*, or Pennsylvania Mountain-Laurel. This is certainly a poison. It is a species of the same genus as the *Rhododendron Crysanthum*, which has lately acquired much reputation in the cure of chronic rheumatism.

NEARLY allied to the *Rhododendron* is the genus *Kalmia*. Of this we have several species, and all of them are poisons. The *Kalmia latifolia*, or Broad-leaved Laurel, is best known to us. It kills sheep and other animals. Our Indians sometimes use a decoction of it to destroy themselves. In the county of Lancaster, an empiric has used the powdered leaves with success in certain stages of fevers, and in *tinea capitis*. A decoction of the plant externally applied has often cured the itch; but it must be used with great care, for thus applied it has been known to occasion disagreeable subsultus, or startings, and convulsions. I have given the powder of this plant internally in a case of fever, and have thus, at least, ascertained that it may be used with safety.

THE medical properties of our different species of *Andromeda* and *Azalea*, which in botanical character are very nearly akin to the *Rhododendron* and *Kalmia*, are but little known to me. I have long suspected that they are poisons. A decoction of

the *Andromeda Mariana* has been found useful as a wash in a disagreeable ulceration of the feet, which is not uncommon among the slaves, &c. in the southern states.

THE *Gaultheria procumbens*, which we call Mountain-Tea, is spread very extensively over the more barren, mountainous parts of the United-States. It belongs to the same class as the plants just mentioned. I have made use of a strong infusion of this plant, which is evidently possessed of a stimulant and anodyne quality. I am told it has been found an useful medicine in cases of asthma. But I have not learned to what particular forms of this disease it is best adapted, nor in what manner it operates.

OUR native species of *Laurus* deserve to be investigated. The Camphor and the Cinnamon belong to this genus: but hitherto, they have not been discovered within the limits of the United-States. The properties of the Common Sassafras, which is a species of *Laurus*, have not been sufficiently examined. It is the *Laurus Sassafras* of the botanists. I have already mentioned the bark. Its oil seems to be an useful medicine. I have been assured that this oil has been found an efficacious medicine, externally applied in cases of wens. This looks probable; for our medicine is nearly allied to camphor, which has been used with advantage in

bronchocele.* I knew a woman in whom an infusion or tea of the root of the Sassafras always induced an oppression at breast, with sighing, and depression of spirits.

DURING the late American war, necessity drove the inhabitants, in many parts of the United-States, to seek for a substitute for some of the spices to which they had been accustomed. They used the dried and powdered berries of the *Laurus Benzoin*, which we call Spice-Wood, and Wild-Alspice-Bush, and found them a tolerable substitute for alspice.†

THE celebrated Gynseng, or *Panax quinquefolium*, may, with propriety, be thrown into the class of stimulants. I find it difficult to speak of this plant with any degree of certainty. If it were not a native of our woods, it is probable that we should import it, as we do the teas of China and Japan, at a high price.

THE *Eryngium aquaticum*, or Water-Eryngo, is one of the stimulants which more especially act as sudorific. It is nearly allied in its qualities to

* The oil rubbed upon the head has been found very useful in killing lice. The bark, especially that of the root, powdered and mixed with pomatum, has the same effect.

† "A decoction of the small twigs makes an agreeable drink in slow fevers, and is much used by the country people. It is said the Indians esteemed it highly for its medicinal virtues." Reverend Dr. M. Cutler.

the contrayerva of the shops. It is one of the medicines of our southern Indians. They use the decoction.

AMONG the more acrid stimulants of our country, I may mention the *Arum Virginicum*, or Indian-Turnip, as it is most commonly called. I could wish that the properties of this plant were examined with attention. The leaves of a plant a good deal allied to this, I mean the *Dracontium pertusum* of the botanists, are employed, by the Indians of Demerara, in a very singular manner, in the treatment of general dropsy. The whole body of the patient is covered with the leaves. An universal sweat, or rather vescication, is induced, and the patient often recovers. Perhaps it would be worth trying this practice in cases of anasarca, which have resisted the usual modes of treatment.*

TOPICAL STIMULANTS.

BY the TOPICAL STIMULANTS, I mean those articles which more especially increase the action or living powers of the parts to which they are applied, and which, at the same time, generally produce a

* This fact was communicated to me by my friend the late Mr. Julius Von Rohr, a gentleman whose death is a real loss to natural science, and perhaps an irreparable loss to the interests of an injured and distressed part of mankind; I mean the blacks.

discharge of fluid from the part. The *Cantharis* is one of these articles: but of this, as an animal body, and not a native, I have nothing to say.

THE bark of our White-Walnut, or Butternut, the *Juglans cinerea* of Wangenheim, is a pretty efficacious blister. The bark of the root is more powerful than that of the stem or branches. It has been applied with advantage, as a blister, to the bite of some of our venomous serpents.

I BELIEVE the bark of our Moose-wood, or Leather-wood, the *Dirca palustris* of Linnæus, is also a blister. This plant, by its botanical habit, is nearly allied to the genus *Daphne*, all the species of which are blisters; especially the *Daphne Gnidium*.

SOME of our Indians make use of a plant, which, when mashed a little, induces nearly as good a blister as the cantharides. It has been used with advantage in sciatica. I do not know this plant.

THE *Ranunculus sceleratus*, or Celery-leaved Crowfoot, is a very acrid plant. If it be bruised, and laid upon any part of the body, it will, in a few hours time, raise a blister. This plant is a native of Europe and of America. The *Ranunculus bulbosus*, called Bulbous Crowfoot, and Butter-

cups, possess the same properties. This plant grows very plentifully in our meadows and fields; but I believe it is not a native.

To this head of topical stimulants, I may refer several species of the genus *Rhus*, or Sumac; particularly the *Rhus radicans*, or Poison-vine; the *Rhus Vernix*, or Vernice-tree; and the *Rhus Toxicodendron*, or Poison-oak. In many persons they induce a peculiar and very troublesome vesication, which I have frequently removed, in a short time, by means of a mercurial wash. These plants are more active in the southern than in the northern climates. They more readily poison immediately after than before a full meal. Their stimulant effect is extended beyond the skin. It is said that the bark of one species (but I cannot tell you what species) has been found useful in intermittents.

SECT. IV. ERRHINES.

I HAVE but little to say under the head of ERRHINES, or STERNUTATORY MEDICINES. Our native vegetables of this class, with the exception of the Tobacco, are but little known to me. Of the Tobacco, as being so well known to you all, I need say nothing.

THE brown powder which is attached to the footstalks of the leaves of the Andromeda, the Kalmia, and the Rhododendron, formerly mentioned to you, is considerably errhine. The powder about the seeds in the seed-vessels of the same vegetables, possesses a similar quality. Whether this powder may be advantageously employed in practice I cannot say.

WE have many native species of the genus Euphorbia, or Spurge. There can be little doubt, that some of them are sternutative.

SECT. V. SIALAGOGA.

THE number of SALIVATING MEDICINES is, I believe, much greater than has been commonly imagined. Perhaps, there are but few of the Incitant medicines which may not be so managed as to salivate. Opium, camphor, and hemloc* all induce salivation.

I AM but little acquainted with our indigenous salivating vegetables. The Seneca Snake-root has long since been observed to possess this property.

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* *Conium maculatum.*

THE *Zanthoxylum Clava Herculis*, or Ash-leaved Tooth-ach-Tree, is a very powerful stimulant. Applied to the mouth and internal fauces, it occasions a copious flow of saliva. By this property it appears to be a good deal allied to the *Pyrethrum*, *Cochlearia*, &c. I am informed that our plant is not merely an external sialagogue, but that even when taken into the stomach, it exerts its effects upon the salivary glands. I speak of the bark of the plant: but the seed-vessels have the same property. This medicine has been given internally in cases of rheumatism.

SECT. VI. EMETICS.

AMONG the indigenous vegetables of our country, there are several which are entitled to your attention as EMETICS. Such are the *Euphorbia Ipecacuanha*, the *Spiraea trifoliata*, the *Asarum Canadense*, &c.

THE first of these, the *Euphorbia Ipecacuanha*, like all the species of the genus, is an extremely active plant. It is employed as an emetic by some of the country-people. I do not know the dose. I suppose it is small, for it belongs to the head of drastic emetics. I am not certain that it would be a valuable addition to the *materia medica*; but, perhaps, it would. There are many cases in which

we have occasion to make use of immediate and active emetics; as when certain poisons, such as laudanum, &c. have been swallowed. In such cases it may possibly be of much use.

I CAN speak with more confidence of the *Spiraea trifoliata*. This is a shrub, which grows very plentifully in various parts of the United-States. It is one of the few active plants of the class *Icosandria*, to which it belongs. The root, which is the part made use of, like that of the officinal *ippecacuanha*, consists of a cortex or bark, and a ligneous or woody part. The active power of the root seems to reside exclusively in the bark. It is a safe and efficacious emetic, in doses of about thirty grains. Along with its emetic, it seems to possess a tonic power. It has accordingly been thought peculiarly beneficial in the intermittent fever, and it is often given to horses to mend their appetite. This plant has a number of different names, such as *Ipecacuanha*, *Indian-Physic*, *Bowman's Root*, &c.

WE have several species of the genus *Asarum*, or *Asarabacca*. I am best acquainted with the *Asarum Canadense*, which is well known by the name of *Wild-Ginger*. In *Virginia* it is called *Coltsfoot*. Both the root and leaves may be used. The expressed juice of the fresh leaves is a powerful emetic.

SOME of our Indians also prepare an emetic from the bark of a certain vine, which a good deal resembles the *Celastrus scandens* of Linnæus. This vine bears bunches of red berries of a sweetish taste, but of a poisonous nature. I know nothing of this plant from my own experience; but a gentleman* who has used it prefers it to every other emetic. The Indians make a decoction of the bark. A large dose is required to produce the effect. This is certainly an objection against its use.

A DECOCTION of the *Eupatorium perfoliatum*, or Thorough-wort, is also emetic. I might have observed, that this plant is used by our Indians as a medicine in intermittent fevers.

THE root of the *Sanguinaria Canadensis*† has been mentioned to me as an emetic. I know nothing particular of this property of the plant. I should have observed, under the head of General Stimulants, that the seeds appear to possess nearly the same quality as the seeds of the *Datura Stramonium*.

I HAVE been assured, that the Six-Nations make use of at least twelve or fourteen different emetics.

* Mr. John Heckewelder.

† Called, in the United-States, Indian-Paint, Puccoon, Turmeric, &c.

All them, except the sulphat of iron, are vegetables. It is probable that the *Spiraea*, *Euphorbia* *Ipecacuanha*, &c. are among the number of these vegetable emetics.

I SHALL conclude this subject of emetics by recommending to your attention an examination of the properties of some of our native species of *Viola*, or *Violet*. I suspect it will be found, that the roots of some of these are endued with an useful emetic quality.

SECT. VII. CATHARTICS.

WE have many indigenous CATHARTICS. Some of them are well worthy of your attention. These may be divided into two kinds, the milder, and the more drastic.

AMONG the more mild, I may mention the *Triosteum perfoliatum*, sometimes called Bastard-Ipecacuanha. This, when given in very large doses, sometimes proves emetic; hence the vulgar name. But I find it a good cathartic. The cortex, or bark, of the root is employed. I give it in doses of twenty and thirty grains. On some occasions, it has seemed to operate as a diuretic. But this may have been only an accidental circumstance. *Rhubarb* sometimes produces the same effect, as has been observed by C. Piso.

NEARLY allied to the *Triosteum*, I mean in its properties, is the *Asclepias decumbens*. This is one of our most beautiful and common plants. It has received many vulgar names, such as *Pleurisy-root*, *Flux-root*, *Butterfly-weed*, &c. It has been much celebrated in Virginia, as a remedy in dysentery. I have used it, and I think with advantage. I believe it does good principally by its purgative quality. The dose is from twenty to thirty grains of the root in powder. A great deal has been said about the virtue of this vegetable in pleurisy.

THE powder of this *Asclepias* is escarotic, and has been found useful in restraining fungous flesh in ulcers. I believe this, and not the *Poke*, as has been supposed, is the plant which is employed by our southern Indians in cases of venereal chancre.

THE dried fruit of our *Papaw*, or *Custard-apple*, the *Annona triloba* of Linnæus, is likewise purgative. I can say nothing of it from my own experience.

I KNOW nothing, from experience, of the *Mechameck*, or *Wild-Rhubarb*, of some of our Indians. It is, certainly, a species of *Convolvulus*, or *Bind-weed*, and I believe the *Convolvulus panduratus*, which in Virginia is called "wild potatoe." Its name *Wild-Rhubarb*, implies that it is a purgative. An

extract but little, if any thing inferior to the Scammony of the shops, has been procured from one of our species of *Convolvulus*. One must have a good deal of *medical faith* to believe what Catesby has said concerning the remarkable power of the *Convolvulus purpureus*, or Purple-Bindweed.*

MORE active than any of the native purgatives which I have mentioned is the *Podophyllum peltatum* of Linnæus. This is a very common plant through the whole of the United-States, and in other parts of North-America. It is known by a variety of names, such as May-apple, Mandrake, Ipecacuanha, Wild-lemons, &c. The fruit is esculent, and by many persons is thought delicious. The leaves are poisonous.—It is the root which is used in practice. In doses of twenty grains, it is an excellent cathartic. It has some advantages over the rhubarb and jallap. It is most advantageously used in combination with calomel, or the crystals of tartar. I have heard much of the virtues of an extract prepared of this root; but have never used it.

THERE is a plant which was thought by Linnæus to be a species of the same genus. He called it *Podophyllum diphyllum*. I have shown, that it is

* The Natural History of Carolina, &c. Vol. i. p. 35.

a new genus.* I have not been able to collect a sufficient quantity of this to ascertain its powers; but, judging by the taste and smell, which it must be confessed are sometimes fallacious tests, I suspect its root possesses the virtues of the May-Apple, or *Podophyllum peltatum*.

THE *Cassia Marilandica*, one of our finest plants, belongs to the same genus as the senna of the shops. The American species possesses nearly the same virtues as the eastern species. It is used as a purgative in different parts of the United-States.

AN extract prepared from the inner bark of the *Juglans cinerea*, or Butternut-Walnut, has long been used as a purgative in the United-States. It is a valuable medicine. As it is often, however, very carelessly prepared by the country-people, it has gone into some kind of neglect. It ought to be prepared by the better informed apothecaries, and have a place in the *Pharmacopœia* of this country, WHEN SUCH A DESIDERATUM SHALL BE SUPPLIED. The dose of this extract is from ten to thirty grains. I have thought it possesses something of an anodyne property.

I HAVE been told, that some of our Indians use as a cathartic a decoction of the bark of the root of

* See Transactions of the American Philosophical Society. Vol. III. No. XLI.

the *Dirca palustris*, or Leather-wood, already mentioned to you. Of this property of the *Dirca* I know nothing farther.

THE decoction or powder of the root of the *Polygala Senega*, or Seneca Snake-root, is also a purgative. Dr. Cullen, indeed, thinks its purgative is its most striking property, and therefore he arranges it under his head of cathartics.*

SOME of our native species of *Iris*, or Flag, are powerful cathartics. Such are the *Iris versicolor* and the *Iris verna*. They are both used by our southern Indians.† I can say nothing certain concerning the dose of these vegetables. It is doubtless small, for they are very active plants. Several of the European species of *Iris* are irritating cathartics.

A SPECIES of *Croton*, or perhaps of *Stillingia*, is used in the southern states, as a cathartic. It enters into the composition of a medicine which has acquired much celebrity in the cure of that hideous disease the *Frambæsia*, or Yaws. This plant grows

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* "I have put it into the catalogue of purgatives, as this is the only operation of it that is constantly very evident; and perhaps all its other virtues depend upon this." *A Treatise of the Materia Medica*. Vol. II, p. 532. Edinburgh: 1789, quarto.

spontaneously on the dry, high lands of Carolina, Georgia, and Florida. It is called Yaw-weed, and Cock-up-Hat. The *Stillingia sylvatica*, perhaps the very plant I have been speaking of, is said to be a specific in the venereal disease.*

SECT. VIII. DIURETICS.

DIURETICS have so long been employed with benefit, in the treatment of dropsies, that it becomes a matter of consequence to increase the number of the medicines of this class, and to learn how to exhibit, with more advantage, those which are already known. I do not mean by this observation to assert, that dropsies cannot be cured without the use of diuretic medicines. On the contrary, I am persuaded that they can, and often are, especially when the dropsy depends upon fever, or is connected with it. But in the management of all kinds of dropsies, it is often necessary to have recourse to the use of diuretics, and I believe that some of the worst forms of this disease, such as hydrothorax, are most effectually cured by these medicines. The *Digitalis purpurea*, so much and so justly celebrated at present, is not, to my knowledge, a native of any part of

* Bernard Romans says, the Jallap grows wild near Pensacola, in Florida.

America.* But we have several native diuretics, which deserve the attention of our physicians. Such are the Seneca-Snake-root, the *Lobelia siphilitica*, the *Serratula spicata*, the Cassena, and others.

THE first of these, the *Polygala Senega* of the botanists, along with its diuretic, possesses an emetic, cathartic, expectorant, salivating, and diaphoretic power. I have already hinted at its salivating and cathartic operation. As a diuretic, it has been employed, and found useful, in dropsy, by Tennent, Bouvart, and other writers. I am informed that it has lately been used, with great success, in the treatment of the cynanche trachealis, or croup, by Dr. Archer of Maryland. He uses a strong decoction of the root, which operates as an emetic, cathartic, and expectorant.† This medicine sometimes operates so powerfully as a sudorific, that I have been assured it has been known to remove portions of the mucous body, or rete mucosum, from

* This plant, however, bears extremely well the open ground of Pennsylvania.

† There is a species, or rather variety, of croup, which I have sometimes called the Bronchial Hives. In this there does not appear to be any reason to suspect the existence of a preternatural membrane in the trachea: but the disease depends upon the presence of large quantities of mucus, which exists in a loose state in the ramifications of the trachea. I believe this species is much more common than the other, which might be called *Cynanche trachealis coriacea*. In the bronchial hives, I have found strong coffee of evident use: but the disease often requires a much more active treatment. The Seneca should have a trial.

the skin of blacks who have used it. I do not vouch for the truth of this fact: but I must confess that to me the circumstance does not seem improbable. Our Indians use a decoction of this root in syphilis. I have no confidence in the powers which have been ascribed to the Seneca, in curing the bite of the rattlesnake. Besides the *Polygala Senega*, we have several other native species of this genus. I do not know how far they possess the powers which have been ascribed to the Seneca itself. It is probable that they only differ in degree. Kiernander, a long time ago, remarked that the *Polygala vulgaris*, which grows spontaneously in Europe, possesses, though in a less eminent degree, the virtues of the celebrated American species.*

THE *Lobelia siphilitica* is also considerably diuretic. This plant was purchased from the northern Indians, by the late Sir William Johnson, as a remedy in the venereal disease: hence its specific name, *siphilitica*. I do not believe, after paying some attention to the subject, that this plant has cured confirmed syphilis. I know that the Indians, even those who are best acquainted with the plant, are glad to have an opportunity of applying to the whites for relief, when they have the disease. They certainly do not trust the cure entirely to the Lobe-

* See his paper, entitled *Radix Senega*, in the second volume of the *Amoenitates Academicæ*.

lia. They use the bark of the wild cherry (*Prunus Virginiana*), the root of the May-apple (*Podophyllum peltatum*), and many other plants.* I believe, however, that the *Lobelia* has been of service in the disease. In gonorrhea it has certainly performed a cure; but the tendency of the constitution, unaided by medicines, to get rid of this complaint, is well known. I may here observe, that gonorrhea appears to be much more common among the Indians than syphilis. The *Lobelia* seems to operate chiefly by its diuretic quality. From their ignorance of botany, many persons in the western country have been using a plant, which they call *Lobelia*, in the same complaints. I have received specimens of the plant under the name of *Lobelia*. It proves to be the *Serratula spicata*, or Spiked Saw-wort. There is good reason to believe, that it has been found useful, not only in venereal complaints, but also in cases of nephritis calculosa, or gravel. Thus ignorance sometimes leads to knowledge. This supposed *Lobelia* is a powerful diuretic. The Indians sometimes drink the decoction of it so strong that it occasions gleans.† It is the root of the plant

* I do not believe that the disease of syphilis was known among the North-American Indians before they became acquainted with the whites. Mr. John Heckewelder informs me, that the Indians speak of it as a foreign disease communicated by the whites.

† They cure these gleans by eating turpentine, as I am informed by Colonel Winthrop Sargent. An old Indian assured this gentleman, that

which is commonly employed, but the flowers and the leaves may also be used.

An infusion of another species of *Lobelia*, I believe the *Lobelia inflata*, has been found very useful in the leucorrhoea, or whites. It is a lactescent, and very active plant. I do not know that this acts as a diuretic, and it would have been more proper to have mentioned the plant under the head of stimulants.

The Cassena is a species of *Ilex*, or Holly. It is the *Ilex vomitoria* of Aiton, and is a native of Carolina, West-Florida, &c. It has been called South-Sea-tea, or Evergreen Cassine. It is thought to be one of the most powerful diuretics hitherto discovered. It is held in great esteem among the southern Indians. They toast the leaves and make a decoction of them. It is the men alone that are

a decoction of this *Serratula* cures syphilis in all its forms. Dr. Allison, one of the army-physicians, has an high opinion of the plant, in this disease. I am told Dr. Bedford, of Pittsburg, has found it an efficacious medicine in the gravel. It certainly ought to have a fair trial in these diseases. The late Major Jonathan Hart assured me, that the Indians northwest of the Ohio could not cure confirmed syphilis. He said the *Lobelia* (I suppose the *Serratula spicata*) had been of service in slight cases: but he was persuaded that the Indians would fall victims to the general complaint, if they were to trust wholly to their own remedies. A Mr. Wilson, who is well acquainted with the Indians, particularly the Delawares and Shawneese, most confidently asserts, that they cannot cure the venereal disease, "when it gets into the blood;" but that they can cure the gonorrhea. He also said, they can remove the venereal disease for a time, but "that it will break out again."

permitted to drink this decoction, which is called Black Drink.

The *Medeola Virginica* grows plentifully in the vicinity of this city, and in almost every other part of the United-States. Its root is white, and tastes a good deal like the cucumber, which has given the plant the name of Cucumber-root. I am told that this root is diuretic, and has cured dropsies. The sensible qualities of the plant do not promise much; but this does not prove that it is not an useful medicine.

SECT. IX. ANTHELMINTICS.

OF the class of medicines called ANTHELMINTICS, or destroyers and expellers of worms, we have several which are entitled to your notice. One of the most celebrated of these is the Carolina Pink-root, the *Spigelia Marilandica* of Linnæus. This is a very common plant in our southern states. It is a valuable medicine, as has been demonstrated by the physicians of Europe and of this country. It is commonly given in the form of an infusion, or tea; but I prefer the exhibition of it in powder. It has been accused of occasioning, for a short time, a disagreeable affection of the eyes. But this effect may often be prevented by combining with the *Spigelia* some of the common Virginia Snake-root. The

Cheerake-Indians have so high an opinion of this plant, that it would sometimes be dangerous for a person to be detected in digging it up, to carry it out of the country. The whites learned the anthelmintic powers of this vegetable from the Indians. The *Spigelia* is said to possess other valuable properties. Infused in wine, it has been found an useful medicine in intermittent fevers. But I can say nothing particular concerning the precise mode of administering it in this case.

THE *Chenopodium anthelminticum* grows plentifully in the United-States. It is commonly called Worm-seed. The whole plant has a most powerful smell, of which it is very retentive. The taste is bitter, with a good deal of aromatic acrimony.

THE root of the May-apple (*Podophyllum peltatum*), which I have mentioned to you under the head of cathartics, has often been found to operate as an anthelmintic. It is used as such by the Cheerake, and other southern Indians. Whether it operates by its cathartic quality exclusively, or partly by some other quality, deleterious to the worms, I cannot say. The whites learned from the Indians the anthelmintic power of this plant.*

* The best time for gathering the may-apple, for medical purposes, is the autumn, when the leaves have turned yellow, and are about falling off. The Indians dry it in the shade, and powder it for use.

THE *Helleborus fœtidus*, or Stinking Hellebore, has been mentioned as a powerful anthelmintic, by Bisset, and other European writers. It has been used in this country, and has been found very efficacious. It is supposed to have been the worm-medicine of a Dr. Witt, who acquired much reputation by the use of it.*

THE Cheerake use a decoction of the root of the beautiful *Lobelia Cardinalis*, or Cardinal-Flower, as a remedy against worms. I have already mentioned the diuretic quality of another species of this genus, the *Lobelia siphilitica*.

THE seeds of the Common Tobacco (*Nicotiana Tabacum*) have also been found useful as an anthelmintic.

THE *Silene Virginica*, or Ground-Pink, as it is called in some parts of our country, is another native anthelmintic. A decoction of the root is used, and is said to have been found a very efficacious remedy.†

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* I am indebted to Dr. Adam Kuhn for this information. He says that Witt used the powder of the leaves in combination with the ethiops mineral.

† From the information of my friend the late Dr. James Greenway, of Virginia.

I HAVE not lost all confidence in the anthelmintic powers ascribed to the *Polypodium vulgare*, or Male-Fern. I do suppose, however, that too much has been ascribed to this plant. We have several native species of this genus, which it would, at least, be a matter of curiosity to examine. The *Polypodium Virginianum* grows about this city, and probably possesses the same powers as the European species.

A PLANT, called the "Pride of India," has lately been mentioned as an excellent anthelmintic. The bark of the root has been used as such in South-Carolina. This vegetable, the *Melia Azedarach* of Linnæus, is not a native of our country.*

I SHALL conclude this account of anthelmintics by observing that the southern Indians dress all their dishes, prepared of the Indian-corn, or maize, (*Zea Mays*) with a strong lixivium, or lye, of the ashes of bean-stalks and other vegetables, in order to prevent the generation of worms. They are of opinion that this grain nourishes the worms exceedingly. Nor is this opinion peculiar to the Indians.

* Mr. Andrew Michaux informed me, that in Persia, where this plant grows spontaneously, the pulp which invests the stone of the seed is pounded with tallow, and used as an "antisphoric," in cases of *tinea capitis* in children.

I HAVE thus, Gentlemen, endeavored to present you with a specimen, or rather rude outline, of an Essay towards a *Materia Medica* of the United-States. My object has been a collection of facts. I could have wished for more leisure to have pursued the subject: but that leisure I do not possess. I hope, however, that with all its imperfections, I have presented you with a sketch which will not prove unacceptable to you. I have opened a path which deserves to be trod by you all.

THE man who discovers one valuable new medicine is a more important benefactor to his species than Alexander, Cæsar, or an hundred other conquerors. Even his glory, in the estimation of a truly civilized age, will be greater, and more lasting, than that of these admired ravagers of the world. I will venture to go farther. All the splendid discoveries of Newton are not of so much real utility to the world as the discovery of the Peruvian bark, or of the powers of opium and mercury in the cure of certain diseases. If the distance of time, or the darkness of history, did not prevent us from ascertaining who first discovered the properties of the Poppy, that "sweet oblivious antidote" for alleviating pain, and for soothing, while the memory remains, those rooted sorrows which disturb our happiness; if we could tell who first discovered the mighty strength of Mercury in strangling the hydra

of pleasures and of generation; if we could even ascertain who was the native of Peru, that first experienced and revealed to his countrymen the powers of the Bark in curing intermittent fevers; would not the civilized nations of mankind, with one accord, concur in erecting durable monuments of granite and of brass to such benefactors of the species? Would not even the savage, who wants not a sense of benefits conferred upon him, be seen to form the tumulus of stones, or to raise the green sod, the only monuments his humble condition would admit of his erecting? And may we not yet look for the discovery of medicines as important to mankind as opium, the bark, and mercury?

For this purpose, the discovery of new and valuable medicines, your situation, Gentlemen, (I address myself at present, more especially to the younger part of my audience); for this purpose, your situation is peculiarly happy. In the pursuit of one of the most dignified and most useful of all the sciences, you are placed in an extensive country, the productions of which have never been investigated with accuracy, or with zeal. From this school, I will venture to call it the *punctum saliens* of the science of our country, you are to spread yourselves over the happiest and one of the fairest portions of the world. In whatever part of this vast continent you may be placed, you will find an abun-

dant field of new and interesting objects to reap in. The volume of nature lies before you: it has hardly yet been opened: it has never been perused. But by your assistance, the knowledge of the natural productions of our country may be greatly extended, and travellers shall then no longer upbraid us with an utter ignorance of the treasures which an all-benevolent Providence has so largely bestowed upon us. May I not flatter myself that among the number of those whom I am now addressing, there are some of you for whom medical discoveries of importance are reserved? discoveries which would add a lustre to your names, whilst they would ensure to you that which is much more to be desired, in this mixed scene of affairs, an happiness that is imbosomed in the happiness of one's country, and the world.



A P P E N D I X,

CONTAINING

ILLUSTRATIONS AND ADDITIONS.

PAGE 14. "I am well acquainted with a physician," &c. The room in which the flowers of the *Magnolia glauca* produced the effects here mentioned, was not a small one, and was well aired. It was in the month of June.

I ought to have observed, under the head of Tonics, that the *Menyanthes trifoliata*, or Marsh-Trefoil and Bog-bean of the English, is a native of our country. It grows spontaneously in Pennsylvania. This is certainly an active plant, and if we can depend upon the half of what has been said of its virtues, it deserves a place in the Pharmacopœia of every country.

Page 18. Dr. Samuel Cooper. See his valuable Inaugural Dissertation on the Properties and Effects of the *Datura Stramonium*, &c. Philadelphia: 1797.

Page 18. *Cicuta venenosa*. In Virginia, this plant is called Wild-Carrot, Wild-Parsnip, Fever-Root, and Mock-El-root. See Transactions of the American Philosophical Society. Vol. iii. No. xxix.

Page 19. *Kalmia latifolia*. In South-Carolina, this beautiful shrub is called "Calico-Tree."

Pages 19, 20. "A decoction of the *Andromeda Mariana* has been found useful as a wash, in a disagreeable ulceration of the feet, which is not uncommon among the slaves, &c. in the southern states." This complaint is very common, particularly among the negroes and the poorer sort of white people, in Carolina, Georgia, &c. It is called "Toe-Itch and Ground-Itch." It is a kind of ulcerous excoriation between the toes, sometimes extending as high as the instep, and is attended with most intolerable itching. It is probably, in a great measure, the consequence of inattention to cleanliness. Is it occasioned by particular insects? Some persons, with whom I have conversed on the subject, are of opinion, that it is owing to the great warmth of the waters to the southward, in which the inhabitants are accustomed to wade a great deal. The disease is sometimes seen in Pennsylvania. Besides the *Andromeda Mariana*, or Broad-leaved Moor-wort, a decoction of the leaves of the *Kalmia latifolia* is used for the cure of this complaint. The decoction of the leaves of both these plants is used. They are both called "Wicke" to the southward.

Page 21. "I knew a woman," &c. She was a stout, and seemingly very hearty, woman. She informed me, that a lady of her acquaintance was affected in the same way by this tea. I could not learn whether the flowers of the *Sassafras* produced a similar effect.

Page 24. *Rhus*, or Sumac. "It is said that the bark of one species (but I cannot tell you what species) has been found useful in intermittents." Perhaps it is the

bark of the *Rhus glabrum*, or Smooth Pennsylvania Sumac. In some parts of our country, this species is called "Indian Salt." Was it used as a condiment to their food by the Indians? The berries of this species are used as a mordant, or fixer for the red colour with which they die their porcupine quills. They use other mordants for the same purpose. The juice of the Upland-Sumac (*Rhus glabrum*?) is said to be excellent for removing warts, and also tetter. It is applied to the affected parts.

Page 27. "The expressed juice of the fresh leaves" of the *Asarum Canadense*, "is a powerful emetic." I should have observed that the leaves are errhine. "*Asari canadensis radices suaveolentes in petio vino fermentanti immersæ, liquorem gratiorem reddunt.*" Cornutus, as quoted by Schoepf, p. 73.

Page 30. *Asclepias decumbens*.—The *Asclepias decumbens*, and the *Asclepias tuberosa*, of Linnæus, appear to me to be merely varieties of the same species. Dr. Schoepf (page 160) mentions a plant which he says is called in Maryland, Butterfly-root, and Pleurisy-root. He says he has not seen the plant; but that the name Butterfly-root seems to shew that it belongs to the class of *Diadelphia*. I suspect this plant is no other than the *Asclepias decumbens*. It is called Butterfly-weed, &c. because its flowers are often visited by the butterflies.

Page 35. *Polygala Senega*. If this plant has been found so useful in pleurisy as it is said to have been, by Tennent, and other writers, I cannot suppose it has been in genuine inflammatory pleurisy, unless previously to

the exhibition of the medicine, the lancet has been liberally used. In the pleurisy, as it is called, which prevails in the low and marshy countries, it is not improbable it has been of real use. This is a true intermittent or remittent, attended with a local pain, either in the side, or in the head. When it is in the head, the disease is called (a ridiculous name) the pleurisy in the head. In either case, it is a complaint in which cordial medicines, and such the Seneca is, have been exhibited with advantage.

Almost an hundred years ago, the Reverend Dr. Cotton Mather mentioned an American plant, called "Partridge-berries," as being excellent for curing dropsy. A decoction of the leaves is to be drank as a tea, for several days. It discharges, he says, a vast quantity of urine, as long as the disease lasts, "after which it may be drank without provoking urine observably. Gouty persons drink it with benefit."* I take the plant mentioned by Mather, to be the *Mitchella repens* of Linnæus. This is a very common plant in every part of the United-States. In New-England, it is called Partridge-berry. Catesby has given us a wretched figure of it. I know nothing of the powers of this plant. I could mention some of the superstitious notions of our Indians concerning it.

Page 40. *Chenopodium anthelminticum*. This is also called Jerusalem-oak. It is the seeds that are used.

*The Philosophical Transactions, Abridged. Vol. V. Part ii. p. 160.

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COLLECTIONS
FOR
AN ESSAY
TOWARDS A
MATERIA MEDICA
OF THE
UNITED-STATES.

By BENJAMIN SMITH BARTON, M. D.

PROFESSOR OF MATERIA MEDICA, NATURAL HISTORY, AND BOTANY,
IN THE UNIVERSITY OF PENNSYLVANIA.

PART SECOND.

—— hanc etiam, MÆCENAS, aspice partem.

PHILADELPHIA:
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BY A. AND G. WAY.

.....
1804.

DISTRICT OF PENNSYLVANIA. TO WIT:



BE it remembered, that on the fourteenth day of February, in the twenty-eighth year of the Independence of the United States of America, Benjamin Smith Barton, of the said District, M. D. hath deposited in this office, the Title of a Book, the right whereof he claims as Proprietor, in the words following, to wit:

"Collections for an Essay towards a Materia Medica of the United States. By Benjamin Smith Barton, M. D. Professor of Materia Medica, Natural History, and Botany, in the University of Pennsylvania. Part Second.

"—— Hanc etiam, Mæcenæ, aspice partem."

In conformity to the Act of the Congress of the United States, entitled "An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts and Books, to the Authors and Proprietors, of such Copies, during the times therein mentioned, 'And also to the Act, entitled "An Act, Supplementary to an Act entitled "An Act for the encouragement of Learning, by securing the Copies of Maps, Charts and Books, to the Authors and Proprietors of such Copies, during the times therein mentioned, and extending the Benefits thereof to the arts of Designing, Engraving and Etching Historical and other Prints."

D. CALDWELL,

Clerk of the District of Pennsylvania.

TO

JOHN COAKLEY LETTSOM, M. D.

FELLOW OF THE ROYAL SOCIETY OF LONDON, &c. &c.

DEAR SIR,

YOU have been pleased to express yourself favourably respecting the First Part of this little work. But it was not this circumstance that has led me to inscribe this Second Part to you. My inducements to do this, are of a higher and a different kind.

YOUR attentions to me, during my residence in London, in the year 1787, were those of a kind and affectionate friend, and cannot readily be forgotten. Nor have you withdrawn your attentions, notwithstanding the distance by which we are separated from each other.

SOME public tribute of respect is due from Americans, to one who has so long, and on so many occasions, manifested his attachment to the United-States. The tribute which I now pay is, indeed, a very feeble one: but it is paid in the warmth of feeling friendship.

A LARGE portion of respect is due from the world to those, who devote their fortune and their time to the promotion of science, and the extension of the godlike empire of benevolence. Your enemies will not deny your

merits in these respects. Your friends are incapable of disguising or withholding their sentiments, on the subject.

ATTACHED, as you are, to every branch of medical science; sensible, as you must be, of the imperfections of medicine, and ardently anxious for its further improvement, I will flatter myself, that you will peruse, with some satisfaction, these imperfect *Collections*, a mass of mere mishapen materials, out of which, at some future period, a part of a more regular AMERICAN MATERIA MEDICA may be constructed. Whether I shall live to take any part in the building, is extremely doubtful. The edifice is one, however, to which I look forward with an ardent zeal. A belief that I may *possibly* behold it, will serve to stimulate me to new and other labours, in this walk of medical science.

WITH the most sincere wishes for your health and happiness, and for the continuance of your useful labours and exertions, I remain,

My dear Sir,

Your obedient and

Obliged friend,

BENJAMIN SMITH BARTON.

Philadelphia,
February 10th, 1804.

P R E F A C E.

I EXPERIENCE some degree of pleasure in being able to fulfil one of my literary promises. I present to the public, a SECOND PART of my *Collections for an Essay towards a Materia Medica of the United-States*. I am not very anxious about the fate of the work, and therefore, I shall not offer any formal apology for its imperfections. These will be readily perceived by the reader of any experience.

IMPERFECT, however, as is this Second Part, I hope the student of medicine and the young practitioner, for whom principally it is intended, will find it not less interesting than the preceding part. It contains additions to many of the articles which are mentioned in the former portion of the work, besides facts and observations concerning other articles, which are either entirely unnoticed, or merely named, there. Some of the newly named articles have never before been noticed in any work relative to the *Materia Medica*: such are *Myrica cerifera*, *Prinos verticillatus*, *Hydrastis Canadensis*, *Frasera Walteri*, &c. How far these are worthy of the attention of physicians, must be left to others to determine.

To render the work somewhat more useful, I have interspersed it with occasional practical remarks. Some of these remarks, I am very ready to allow, are not necessarily introduced into the work. Such are those respecting Arsenic, and Digitalis. But it will be recollected, that I am not in pursuit of anything like a methodical or regularly-digested work: and if any value be attached to the remarks, I shall cheerfully submit to be censured for my want of order and arrangement, in the management of my subject.

THE principal, and indeed only, object which I had in view in composing the First Part of this little work, has been, in some measure, accomplished. I WISHED TO TURN THE ATTENTION OF OUR PHYSICIANS TO AN INVESTIGATION OF THE PROPERTIES OF THEIR NATIVE PRODUCTIONS. Already have I had the satisfaction to perceive the useful tendency of my labours. Several of the vegetables which I had mentioned in the *Collections*, have been examined with care and ability, by graduates in the University of Pennsylvania, who have thus put us in possession of a large body of useful information concerning those vegetables. It is unnecessary to mention, in this place, the titles of the dissertations to which I allude. Most of them are referred to in the present publication. Some of these dissertations reflect honour upon their authors; and must evince to the world, that an important branch of natural history and of medicine is making rapid advances among us. It is not one of the least pleasurable circumstances of my life, that I have been, in some degree, instrumental in directing the medical students of the United-States to a few of those objects, which have since solicited their attention.

IN the present portion of the *Collections*, I have called the attention of the student to other objects of the American vegetable kingdom, concerning which I am anxious to receive more extensive and more correct information. My various pursuits do not permit me to enter minutely into an investigation of the properties of the articles which I mention. Indeed, I wish it to be understood, that some of these articles have never been employed by myself in practice; and, consequently, that my information concerning them has been derived from the experience of other persons. It is obvious, therefore, that I cannot always vouch for the truth or accuracy of the observations, which I detail, concerning the properties and effects of our vegetables. But neither could I have vouched for their truth and accuracy, even though I had related them from my own experience. For where is the candid physician who will not confess, that he often errs? Where is the physician who will not acknowledge, that in the course of his practice, he has often ascribed effects to medicines, which those medicines did not produce? EXTRAORDINARY (PROVIDED THEY BE SOLITARY OR RARELY OBSERVED) EFFECTS OF MEDICINES, IN THE CURE OF DISEASES, SHOULD BE RECEIVED BY THE PHYSICIAN, WITH NEARLY THE SAME HESITATION WITH WHICH THE PHILOSOPHIC NATURALIST OR HISTORIAN, RECEIVES MIRACLES INTO HIS COLLECTION OF WELL-ASCERTAINED FACTS.



THE following observations form a part of one of my Introductory Lectures. I have thought that they might, with some propriety, be introduced in this place.



"It is a trite observation, that every country possesses remedies that are suited to the cure of its peculiar diseases. The greater number of those who have adopted this opinion, have imagined, that the principal portion of indigenous remedies is to be found among the vegetables of the countries in which the diseases prevail.

"THIS observation, in a limited degree, is undoubtedly well founded. But the universality of the position may, I think, be called in question. Man is subject to many diseases, both of body and of intellect, for the cure of which it would seem to be a part of the scheme of Providence, that he never shall discover remedies. Moreover, man is capable of subsisting, and actually does subsist, in certain portions of the earth, in which hardly a vegetable is seen, or can be made, to grow. Yet, in these situations man is not exempted from diseases: for diseases appear to be as necessarily a part of his essence or nature as the organs and the functions of his body.

"BUT although we are not authorized, from an extensive examination of the subject, to conclude, that every country possesses native remedies, that are the best adapted for the cure of its peculiar diseases, still it must be admitted, that the observation

is, in part, well founded. It was remarked by a writer*, who was more distinguished for the vivacity of his wit than for the solidity of his judgement, that the intermittent fever prevailed in Europe, but that the Peruvian bark was found in South-America. This observation was intended as an exception to the general rule which I have mentioned. Perhaps, it was intended to arraign the benevolent order of Providence. But the observation can have no weight with physicians who know, that the intermittent fever is the disease of almost every climate, and that the Peruvian bark is not the only remedy that is capable of subduing this disease.

“WITHOUT any regard, however, to the rule that, in general, the remedies for diseases exist in the native countries of such diseases, it may safely be conjectured, judging from the discoveries which have already been made, in the term of three hundred years, that there are no countries of the world from which there is reason to expect greater or more valuable accessions to the *Materia Medica*, than the countries of America. The different species of *Cinchona*, or Peruvian bark, the *Quassia*, the *Simarouba*, the *Guaiacum*, the different kinds of *Jallap* and of *Ipecacuanha*, the *Polygala Senega*, the two species of *Spigelia*, not to mention many other valuable medicines, are all natives of America; and most of them have not, hitherto, been found in any other portion of the world.

“It has often been said, that the *Materia Medica* is already crowded with a great number of inert, useless,

* Monsieur De Voltaire.

or pernicious medicines. This I think is strictly true; and it is certainly, high time to banish from the shops many of the medicines, or articles, which they contain. This fullness of the *Materia Medica* ought not, however, to make us relax in our inquiries into the properties of the vegetables of our own and of other countries. No candid physician will deny, that he often meets with cases in which the choice of active medicines is a matter of consequence. So various are the constitutions of our patients; so infinitely various are the forms under which diseases present themselves, that it becomes absolutely necessary to know, and to possess, a great number of different medicines, even of those which are endowed with a common assemblage of properties.

“I AM not ignorant, that there are some persons, who consider the science of medicine as a science of extreme simplicity; who believe, or affect to believe, that in the treatment of diseases, we have arrived at something like the *ultimatum* of perfection. We are already, say these persons, in possession of all the means that are necessary for the alleviation, or for the cure, of our diseases. It is needless, then, to ransack nature any further.

“IN opposition to such an opinion as this, it will be sufficient to hint at the recent date of the introduction of some of the most important articles of medicine into the *Materia Medica*; or at the recent date of our acquaintance with the new properties and powers of those which have long been known. The properties of Mercury could hardly be said to be

known until the general spread of the venereal disease through Europe, towards the end of the 15th and the beginning of the 16th centuries. Nay not more than half the invaluable powers of this herculean medicine were discovered before the middle of the last century; and I cannot hesitate to believe, that many of its properties are still unknown. The Peruvian bark, the Ipecacuanha, the Jallap, the Tobacco, the Guaiacum, and many others, were not even named to the physicians of the old-world, until several years after the discovery of America, in 1492. Some of the most valuable properties of Opium, such as its use in the treatment of low nervous fevers, were not detected before the middle of the eighteenth century; and of the Digitalis, one of the most common plants of some of the most cultivated countries of Europe, little except the fact of its being an extremely deleterious plant, was ascertained previously to the excellent publication of Dr. Withering. These facts, certainly, show us, that we have no reason for believing, that the list of important articles of the *Materia Medica* is completed; or that we are fully acquainted with all the properties of those which have been known for hundreds of years. On the contrary, they render it highly probable, that hitherto, we have discovered but a very small part of those vegetable and other remedies, which Providence, in the fullness of his benevolence, has scattered over the earth.

“In conducting our inquiries into the properties of the medicinal vegetables of our country, much useful information may, I am persuaded, be obtained

through the medium of our intercourse with the Indians. Let not this observation induce any of you to suppose, that I am of opinion, with many travellers, and with some writers on the *Materia Medica*, that the savages of North-America are in possession of absolute specifics for all, or for any, of their diseases. I am too much of a skeptic in matters that regard the science of medicine to admit of the existence of any medicines that are strictly entitled to the name of specifics; and my inquiries concerning the diseases and remedies of our Indians have convinced me, that among these people the art of medicine is truly in a shapeless and an embryo state.

"It is, nevertheless, certain that some of the rudest tribes of our continent are acquainted with the *general* medical properties of many of their vegetables. Like the rest of mankind, they are subject to diseases; and like all nations in the savage forms of society, many of their diseases are violent. Nor, notwithstanding what has been repeatedly asserted to the contrary, are the diseases of those North-American tribes with whom we are the best acquainted either simple or few. The diseases of our Indians, even of those tribes who have been the least influenced, or corrupted, by their intercourse with more civilized nations, are numerous, and often present themselves in the mixed or complicated forms which have been supposed to be, in a great measure, confined to nations in the more improved and luxurious stages of society. It is, I believe, a truth, that the medicines of savage and other uncultivated nations are, in general, medicines of an active kind. Thus, if we except that

farrago of articles which are employed by our Indians as supposed remedies against the bites of venomous serpents,* we shall find that the *Materia Medica* of these people contains but few substances as inert as many of those which have a place in our books on this science, and on other parts of medicine. The astringents and tonics, which they employ in the treatment of intermittent fevers, are the barks of some species of *Cornus*, or Dogwood, such as *Cornus florida* and *Cornus sericea*, both of which are found to possess properties very nearly allied to those of the *Cinchona*, or Peruvian bark: their purgatives are different species of *Iris*, or Flag, the root of the *Podophyllum peltatum*, or May-apple; the bark of the *Juglans cinerea*, or Butter-nut, and some others: their emetics are the *Spiræa trifoliata*, or Indian Physic; the *Euphorbia Ipecacuanha*, Sulphat of Iron, or Copperas, and many others: their sudorifics are the active *Polygala Senega*, or Seneca snake-root, the *Aristolochia Serpentaria*, or Virginia snake-root, the *Eupatorium perfoliatum*, or Thorough-wort, the *Lobelia siphilitica*, &c: their anthelmintics are the *Spigelia Marilandica*, or Carolina Pink-root, the *Lobelia Cardinalis*, or Cardinal-Flower, &c.

“FROM this list, which it would be an easy task to render more extensive and more perfect, it must be obvious, that the Indians of North-America are in possession of a number of active and important remedies. It will not be denied, however, that they do not always apply their remedies with judgment and discern-

* See Transactions of the American Philosophical Society. Vol. iii. No. xi.

ment. But what treasures of medicine may not be expected from a people, who although destitute of the lights of science, have discovered the properties of some of the most inestimable medicines with which we are acquainted? Without mentioning the productions of South-America, let it be recollected, that it is to the rude tribes of the United-States that we are indebted for our knowledge of *Polygala Senega*, *Aristolochia Serpentaria*, and *Spigelia Marilandica*.

"It is observed by De Pauw, that Botany is the only science that is known to savage nations.* This observation is more just than many others that are to be found in the writings of this singular author. But it would have been still more just, if, instead of Botany, the term *Materia Medica* had been employed. Savages, in general, know nothing of the sexual differences of vegetables; their classification, &c. circumstances intimately appertaining to the science of Botany.† But a knowledge of the obvious habit or deportment of their plants, and of the general properties of these plants, is, indeed, a very prominent feature in the description of many savage nations: it is, perhaps, more especially a prominent feature in the description of the savage nations of North-America.

* *Recherches Philosophiques sur les Américains*, &c. Tome 1.

† If, however, we may depend upon the observations of Dr. Forster, the inhabitants of Otaheite, and other islands in the Southern Pacific Ocean, are "acquainted with the sexual system, especially in the coco-palm." These people have also learned to designate by distinct and often appropriate names, the bracte and various other parts of the plant, in a manner so correct, that it must be acknowledged, that the dawn of Scientific Botany has commenced among them. See observations made during a Voyage round the world, &c. p. 498, 499, 500. London: 1778. 4to.

“But it is only with their general properties that they are acquainted. For the discovery of these the uncultivated reason of man, even the wild instinct of the animal, are often sufficient. It is the province of science; it is the duty of those who attach themselves, with a well-guided ardour, to the amiable pursuits of medical and natural science more especially, to investigate, with a laborious and accurate attention, the whole of the properties of the various natural objects by which they are surrounded. The illiterate Indians of Loxa, in Peru, were not ignorant, that the Peruvian bark cured intermittent fevers: but it was reserved for men of science, aided by the ample experience of many years, to discover the numerous other properties of this important, this indispensable, article of the *Materia Medica*.”



COLLECTIONS, &c.

SECTION I. ASTRINGENTS.

GERANIUM maculatum.* This is, certainly, a vegetable entitled to the attention of American physicians. In Kentucky, where it is called "Crow-foot," it has been collected for the Tormentil† of the shops. In some of the north-western parts of the United-States, it is known by the name of *Racine a Becquet*, after a person of this name. The western Indians say it is the most effectual of all their remedies for the cure of the venereal disease. I have not, however, been able to learn, in what form or stage of this disease they employ it. I doubt not it would be found very useful, exhibited internally, in cases of old gonorrhoea. In such cases, the internal astringents are too much neglected.

AN aqueous infusion of the root forms an excellent injection in gonorrhoea. In old gonorrhoea, and in gleans, a more saturated infusion may be employed, either alone, or combined with a portion of the sulphat of zinc, or white vitriol.

* See Collections, &c. Part First. pages 9 & 43.

† Tormentilla erecta of Linnæus.

BOTH the simple sulphat and the oxy-sulphat of iron strike a deep violet colour with the infusion of the root in water.

HEUCHERA Americana*. This is the Heuchera Cortusa of Michaux†, who has unnecessarily changed many of the long-received names of American plants. This Heuchera is one of the articles in the Materia Medica of our Indians. They apply the powdered root to wounds, and ulcers, and cancers.

OF the *Pyrola umbellata* I have made no mention in the first part of this work. It is a very common North-American plant, and is sometimes called Ground-Holly, but is much better known (at least in New-Jersey and in Pennsylvania) by the name of *Pippsisseva*‡, which is one of its Indian appellations. In the sexual system of Linnæus, it belongs to the same class and order (*Decandria monogynia*) as the *Uva Ursi*. It also belongs to the same natural assemblage of plants as the last mentioned vegetable: viz. the order *Bicornes* of Linnæus, and the order *Ericæ* of Mr. de Jussieu. The two plants are, unquestionably, nearly allied to each other in respect to their botanical affinity, as well as in their medical properties.

THE *Pyrola* is considerably astringent, and the quantity of astringency appears to be nearly the same in the leaves and in the stems. Hitherto, it has not greatly excited the attention of physicians. But I think it is worthy of their notice. A respectable physician, in East-Jersey, informed me, that he had employed this plant,

* See Part First. Page 9.

† *Flora Boreali-Americana*, &c. Tom. i. p. 171.

‡ Perhaps, *Pippsesawa*.

with manifest advantage, in the same cases in which Uva Ursi has been found so useful. This looks very probable: for it would seem, from many facts, that the lithontriptic powers of the Uva Ursi are, in no small degree, owing to the astringent quality of this plant: and, "perhaps, upon the whole (as an eminent practitioner* has observed), we shall find it no better than other vegetable astringents; some of which have long been used by the country people, in gravelly complaints, and with very great advantage: though hitherto unnoticed by the regular practitioners†."

THE Pyrola, as I am informed by my pupil Dr. John S. Mitchell, has been used, with good effect, in some cases of intermittents. In one case, its diuretic operation was evident. "The urine discharged was almost black. It appeared as if a few drops of a solution of the sulphat of iron had been put into an astringent infusion‡." This was a solitary occurrence, and one which I am unable to explain.

FOR more ample information concerning this vegetable, I beg leave to refer the reader to Dr. Mitchell's Inaugural *Essay on the Arbutus Uva Ursi, and the Pyrola umbellata and maculata* of Linnæus§. Prefixed

* Dr. Withering. See A Systematic Arrangement of British Plants, &c. Vol. II. p. 391. London: 1801.

† I cannot forbear mentioning in this place (at the risk, perhaps, of exposing myself to the ridicule of the mere theorist), that the *nuclei*, or kernels, of the common American Hazlenut (*Corylus Americana*) have been found very useful in affording relief to several persons labouring under nephritic, and perhaps calculous affections. I mention this fact on the respectable authority of my friend, Dr. Frederick Kuhn, of Lancaster, in Pennsylvania. Do these kernels act solely by virtue of their astringent quality?

‡ Letter to me, dated Sunbury, August 8th, 1803.

§ Philadelphia: 1803.

to this dissertation, there is a good figure of the *Pyrola umbellata*.

THE *Myrica cerifera*, or Candle-berry Myrtle, deserves to be mentioned in this place. This is a common shrub in many of the maritime parts of the United-States, as in New-Jersey, Delaware, &c. This is, unquestionably, a very powerful astringent, and as such has been employed by the country-practitioners of the United-States. A decoction of the bark of the root is employed, sometimes alone, and sometimes in combination with the bark of the root of Persimmon, or with the bark of the Black-Alder, which I am afterwards to mention. The simple or combined decoction of the *Myrica* has been used, with much advantage, in dropsical affections succeeding to intermittents, particularly in the peninsula of Delaware, where dropsies, in various shapes, are, perhaps, more common than in any other part of North-America, within the same latitudes. The root of the *Myrica* has likewise been found useful in the treatment of hæmorrhages from the uterus, &c. It was remarked by an old physician,* who had much experience in the use of this vegetable, that it often acted as a gentle purgative.

SEVERAL varieties of the *Myrica cerifera* are described by the botanists. That of which I have been speaking is distinguished by the circumstances of its having broader leaves, and larger berries, than the others. It is the variety marked β and named *media*, in the *Flora Boreali-Americana* of Michaux.† I cannot, however, assert, that as an astringent, this is to be preferred to the other varieties.

* Dr. Matthew Wilson.

† Tom. II. p. 228.

THE *Myrica* Gale, called Sweet-Willow, or Dutch-Myrtle, and also American Bog-Gale, is likewise a native of the United-States. But this, to which useful qualities are ascribed, by Linnæus and other writers, seems less worthy of our notice than the above-mentioned species.

THE *Prinos verticillatus** of Linnæus is a very common shrub in many parts of the United-States. It is especially common in the maritime parts of the union, at least as far south as North-Carolina; and is generally found to grow in the greatest perfection in swamps, or marshy places. It is the *Prinos Gronovii* of Michaux. To the inhabitants of New-Jersey and Pennsylvania, it is well known by the name of Black-Alder. If I do not mistake, however, the same appellation has been bestowed upon another American shrub, the *Ilex*? *Canadensis* of Michaux. Care must be taken to distinguish our *Prinos* from the Swamp-Alder, or Candle-Alder, which is the *Betula serrulata* of Aiton.

THE bark of the *Prinos verticillatus* is manifestly astringent. It is, likewise, considerably bitter, and along with these properties there is united a degree of pungency. The berries, which are of a fine red colour, greatly partake of the bitter quality, and if infused in wine or brandy, might be employed, with advantage, in many of those cases in which bitters, in a vinous or spirituous menstruum, are exhibited by physicians. But it is especially the bark of the shrub that seems entitled to our attention.

THIS has long been a popular remedy in different parts of the United-States. But as yet, it has been

* Marshall calls this Virginian Winter-Berry.

greatly neglected by the regular physicians, only a few of whom (so far as I can learn) have been in the habit of employing it. This bark possesses the common properties of the vegetable astringent and tonic medicines; and, accordingly, it has been used as a substitute for the Peruvian bark, in intermittents, and in other diseases. It is employed both in substance and in decoction, most commonly, however, in the latter shape. It is supposed to be especially useful in cases of great debility unaccompanied with fever; as a corroborant in anasarca and other dropsies, and as a tonic in cases of incipient sphacelus, or gangrene. In this last case, it is, unquestionably, a medicine of great efficacy. It is both given internally, and employed externally as a wash. On many occasions, it appears to be more useful than the Peruvian bark. It ought to have a place in the shops, and in the Pharmacopœia of this country, WHEN SUCH A DESIDERATUM SHALL BE SUPPLIED.

IN making decoctions or infusions, for the different purposes which I have mentioned, the berries are often mixed with the bark.

THE *Orobanche Virginiana*, or Virginian Broom-rape, is a very common plant in many parts of North-America. Michaux says that it grows from Canada to Georgia. It is generally, if not always, found under the shade of the American Beach-tree (*Fagus ferruginea*)*. Hence one of its names, in Pennsylvania, viz. "Beach-drops." But it is much more generally known by the name of Cancer-root†.

* Michaux entirely restricts its habitation to the root of the Beach: "In radice Fagi nec aliæ plantæ." *Flora, &c.* Tom. II. p. 26.

† See *Elements of Botany, &c.* Part Third. p. 80.

EVERY part of this plant is considerably astringent. This astringency is evinced not only by the taste of the plant, but also by subjecting it to chemical examination. The infusion or decoction assumes an ink-like colour, on adding to it a solution of the sulphat of iron, or copperas. But along with the astringency, especially in the recent plant, there is combined a peculiar and extremely nauseous bitterness. Judging by the taste, we should not hesitate to say, that the Cancer-root is a vegetable endued with considerable powers. It must be confessed, however, that these powers are much less obvious in the dried than in the recent vegetable.

SOME of the medical powers of this plant have long been known to the people of the United-States. It has been celebrated as a remedy in dysentery. There are, I think, cases of dysentery in which much advantage might be expected from the exhibition of a medicine possessed of the powers of the Cancer-root. But this vegetable has acquired its principal reputation as a remedy in cancerous affections. How far it is entitled to any character in such affections, I am unable to say, having never employed it in a case of genuine cancer. But it is proper to mention, that the *Orobanche* has been supposed, by many persons, to have formed a part of the celebrated cancer-powder of Dr. Hugh Martin, whose success in the management of many cases of this dreadful disease, has been acknowledged by the regular practitioners of Philadelphia, &c.

AS early as 1785, at which time I was a student of medicine, I was informed, by the people inhabiting the western parts of Pennsylvania and Virginia, that this *Orobanche* formed the principal part, if not the whole, of Martin's powder. It was even said, that Martin, who

had passed some time at Fort-Pitt, was known to have collected the plant for the purpose. I believe it to be a fact sufficiently established, that the basis (or perhaps rather the most active part) of Martin's powder was the oxyd of arsenic. This has been shown by a chemical examination of the powder*, and by other circumstances nearly as decisive. Thus comatose affections (such as are known to be induced by arsenic) have been induced by the powder of Martin, even when externally applied in cancerous ulcers. A case of this kind came under the notice of a physician† in Philadelphia. The patient seemed to fall a victim to the application of the medicine.

BUT the powder of Martin did not consist entirely of the oxyd of arsenic. This is certain. I believe it to be certain also, that he combined with the arsenic, a vegetable matter; and from what has been said, it would seem not entirely improbable, that this vegetable was the *Orobanche Virginiana*.

IT may be said, and it is not impossible, that Martin added the vegetable matter merely to disguise the arsenic, reposing, at the same time, *all* his confidence in the arsenic alone. I think it more probable, however, that the superior efficacy of Martin's powder, and of the powders in the hands of other empirical practitioners, has been, in part, owing to the addition of something to the arsenic. If there be *no* foundation for this suspicion, how has it happened, that in the management of cancers, the empirical practitioners have often succeeded so much better with their medicines than the regular physicians

* See Dr. Rush's paper on the subject, in the Transactions of the American Philosophical Society. Vol. II. No. xxvi.

† Dr. Adam Kuhn, from whom I received the fact.

have done? Both use arsenic. Some of the cancer powders, employed by empirics, in Europe, are known to have been composed, in part, of arsenic and a vegetable matter. The celebrated powder of Plunked was made up of arsenic, the root of a species of *Ranunculus*, or Crow-foot; and sulphur.

WHATEVER may have been the vegetable which Martin used in combination with arsenic, it is certain, that the powder of the *Orobanche*, or Cancer-root, has been of great service (in Philadelphia, &c.) externally applied to obstinate ulcers, some of which had resisted the applications that are commonly made use of in such cases. It would be well to try the effects of this vegetable in those dreadful ulcerations (by some writers deemed cancerous), which are too frequently the consequence of the use of mercury, when it has been given in large quantity. Cases of the kind I allude to, are recorded by Dr. Donald Monro, Mr. Adams, in a valuable work*, and other writers. I have had occasion to see some ulcerations of the same kind in Philadelphia. They often refuse to yield to stimulating or to mild applications.

WITH the view to encourage further inquiry into the nature and properties of the *Orobanche Virginiana*, I may here mention, that one of the European species of this genus, the *Orobanche major*, or Greater Broom-rape, is a very powerful astringent, and is said to have been found useful, externally applied, in cases of ulcers. This I mention on the respectable authority of Sir John Floyer†. The activity of the European plant may even be inferred from the fact mentioned by Shreber, that cattle

* Observations on Morbid Poisons, Phagedæna, and Cancer, &c. p. 65. &c. London: 1795.

† Pharmacobasanos, or The Touchstone of medicines, &c. p. 159. London: 1687.

do not eat it. We must pay, perhaps, no regard to certain other powers which have been ascribed to it. "Dicunt autem facere, ut taurum vacca appetat*." I have not been able to learn whether the *Orobanche Virginiana* is eaten by the horned cattle, or other quadrupeds.



SECTION II. TONICS.

I SHALL open this section with a few notices concerning some indigenous Bitter vegetables, which seem well entitled to the attention of physicians. At the same time, I avail myself of an opportunity of observing, that the tonic quality of vegetables does not so much consist in bitterness as some celebrated writers† have imagined. It will not be denied that many of the bitters (even those which have their bitterness unmixed with astringency) are some of the most useful tonics with which we are acquainted. But, it must be allowed, that certain other bitter vegetables have but a feeble claim to the character of tonics. And it would not be a difficult task to show, that some of the most valuable tonics are (strictly speaking) neither bitter nor astringent. It is not easy, therefore, to say, in what the tonic property of medical agents does especially consist. It will hardly be doubted, however, that every tonic exerts a stimulant effect upon the system, though, on many occasions, it may be difficult, or impossible to measure the intensity or degree of the sti-

* Alberti v Haller *Historia Stirpium Indigenarum Helvetiæ inchoata*. Tom. i. p. 130.

† Dr. Cullen, particularly. See his *Treatise of the Materia Medica*. Vol. II. p. 55, &c.

mulus applied, merely by an attention to the pulse. THE PULSE IS OFTEN A VERY UNCERTAIN OR FALLACIOUS TEST OF THE OPERATION OF STIMULANT AGENTS.

THE *Zanthorhiza apiifolia** of L'Heritier, or Parsley-leaved Yellow-root, is a native of North and South Carolina, and Georgia. It is a small shrub, which flowers early in the spring. This vegetable has long been known; but it is only within a very few years that it has excited the attention of physicians.

THE bark of the root is intensely bitter; I think more so than the root of Columbo. This bitter property pervades the wood of the root, as well as the bark: but in the former it is, unquestionably, weaker than in the latter. The bark of the stem is also bitter, perhaps but little less so than that of the root. The sensation of bitterness that is left in the mouth, when the bark has been chewed, is very durable and adhesive. It continues, to a considerable degree, even after the mouth has been repeatedly washed with cold water. There does not seem to be combined with the bitterness, any very considerable degree of a foreign acrimony. However, upon holding the bark for some time in the mouth, it evidently communicates to it a sense of pungency, or acrimony. I think there is less of this pungency in the bark of the stem than in that of the root.

THE infusion of the bark of the root, in hot water, had a disagreeable and somewhat virose smell. From this, however, it ought not to be inferred, that the *Zanthorhiza* is a deleterious plant. A similar smell belongs

* *Zanthorhiza simplicissima* of Marshall, and *Zanthorhiza tinctoria* of Woodhouse. The specific named *apiifolia* should be preferred.

to many other bitter vegetables, even to some of those which appear, from the experience of many ages, to be entirely innoxious. I am not ignorant, indeed, that a poisonous quality has been supposed to be necessarily attached to every bitter. I cannot help thinking, that this theory has been the result of a very limited view of the subject of bitters, and of their effects. The evil effects of the Portland powder, and other similar articles, in gouty affections, have, I am persuaded, been greatly exaggerated by Dr. Cullen*, and some other writers: and the real bad effects of these articles must, perhaps, be ascribed to the long-continued repetition of a stimulant powder, by which the energies of the system are wasted, and irregularities occasioned in the circulation of the blood.

THE Zanthorhiza, so far as we are enabled to investigate its properties, appears to be one of the most pure and unmixed bitters. The addition of the sulphat of iron to an infusion of the bark of the root in boiling water, did not produce the least perceptible change in the colour of the infusion, even when the two articles were suffered to stand for a considerable time, after the addition. In this respect, as well as in others, it appears to make a very near approach to the Columbo. But I am inclined to think, that the Zanthorhiza is the least pure of the two†.

To the saliva, the bark, when it is chewed, communicates the most beautiful yellow colour. The infusion in hot water is also very fine. If its colour could be fixed, the Zanthorhiza would be one of the most important of all the yellow *plantæ tinctoriæ* with which we are acquainted.

* A Treatise of the Materia Medica. Vol. II. p. 64, 65, 66.

† See Elements of Botany, &c. Explanation of the Plates. Page 26.

HITHERTO, the Zanthorhiza has been but little employed in practice. Some experiments have, however, been made with it*, and these are calculated to show, that it may be advantageously employed, and that it ought to have a place in the shops. Although less pure than Columbo, I believe it is, in certain cases, to be preferred to that celebrated bitter. Professor Woodhouse, who seems to have paid more attention to this vegetable than any other person, has used it, with very good effect, in several of those cases in which the bitter medicines are proper.

FOR a correct representation of the Zanthorhiza, see the *Medical Repository*, already referred to, and also my *Elements of Botany* †.

IN the First Part of these *Collections* ‡, I have made mention of the *Hydrastis Canadensis*, commonly called "Yellow-root." This is a very common vegetable in various parts of the United-States; particularly in the rich soil adjacent to the Ohio and its branches, in the western parts of Pennsylvania and Virginia; and in Kentucky. The root of this plant is a very powerful bitter: perhaps not less so than that of the Zanthorhiza. To the taste, however, it is unquestionably more pungent than the Zanthorhiza. When held between the lips, it even excites a very considerable sense of pungent heat. The dried root has a strong and virose smell, very similar to that of the Zanthorhiza, but stronger. The infusion in hot water, smells very like the infusion of Zanthorhiza. The two infusions taste a good deal alike.

* See *Medical Repository*. Vol. V. No. II.

† Plate XII.

‡ Page 9. See, also, *Elements of Botany*, &c. Part Third, p. 70.

ON adding a solution of the sulphat of iron to an infusion of the root of the Hydrastis, I was not able to discover the least indication of astringency. This further shows the affinity of the two plants to each other. I may add, that although they do not both belong to the same artificial subdivision in the sexual system, they are both near relations in a family of Nature's making. They belong to De Jussieu's order *Ranunculaceæ*, which may be considered as a pretty natural assortment of vegetables.

THE Hydrastis is a popular remedy in some parts of the United-States. A spirituous infusion of the root is employed as a tonic bitter, in the western parts of Pennsylvania, &c. and there can be little doubt, that both in this and in other shapes, our medicine may be used with much advantage. An infusion of the root, in cold water, is also employed as a wash, in inflammations of the eyes. In these cases, it is well known, that some of the bitter medicines, such as ox-gall, fish-gall, and others, have long maintained some character; and some of them, I believe, are entitled to the praises which have been bestowed upon them.

THE root of the Hydrastis supplies us with one of the most brilliant yellow colours, with which we are acquainted. When it shall be subjected to proper experiments, I doubt not, it will be found a most valuable dye-plant, and well worthy of a place in the manufacturing houses.

THE *Gentiana lutea*, or common Gentian of the shops, is said to be a native of the United-States*. This, per-

* Kalm.

haps, is doubtful. But it is certain, that several of the indigenous species of this genus are intense and pretty pure bitters, but little, if at all, inferior to the species just mentioned*.

THE *Gentiana Centaurium* †, or Lesser Centory, is found native within the limits of the United-States. This, however, is not the plant which is called Centory, or "Centry," in Philadelphia, &c., where it is so commonly employed both by physicians, and as a domestic remedy in almost every family.

THE Centory to which I allude is the *Chironia angularis* of Linnæus. This is a beautiful annual plant, and grows abundantly in many parts of the United-States, as in New-York, Pennsylvania, Virginia, &c. Every part of the plant is intensely bitter, in which respect it differs from the *Gentiana Centaurium*, the blossoms of which are nearly insipid ‡. In other respects, it is closely allied to the Lesser Centory, the properties of which are well known, and established by the experience of physicians, for many hundred years. In no respect, that I can perceive, is the *Chironia* inferior, as a bitter, to the *Centaurium*. As a much more common plant than this latter, it may, without any injury to our patients, supersede its use in the practice of American physicians, most of whom, if I do not mistake, have supposed, while they were employing the *Chironia angularis*, that they were using the *Centaurium*, of the European writers on the *Materia Medica*. The *Chironia*

* See Collections, &c. Part First, page 15.

† It is the *Chironia Centaurium* of Curtis, Withering, Smith, and other botanists.

‡ Lewis.

is mentioned by Dr. Schoepf, who speaks of it as aromatic and bitter, and mentions the infusion as being useful in fevers*. Indeed, I believe that no bitter has been more generally prescribed in the United-States, in febrile and other affections, than this common American plant, especially since the memorable year 1793, when it was much employed in certain stages of yellow-fever; and in which I believe it was very often used with much benefit.

THE *Frasera Caroliniensis* of Walter† (*Frasera Walteri* of Michaux‡) is nearly allied, in botanical habit, to the genus *Gentiana*. This plant, which is a native of the states of New-York, Carolina, &c., is furnished with a large tuberous root, of a yellow colour, which promises to be little inferior as a bitter, to the *Gentian* of the shops, and for which, I suspect, it has sometimes been mistaken.

I CANNOT conclude this part of the subject of the Tonics, without observing, that the countries of the United-States are so rich in bitter vegetables, that there can be no *necessity* for having recourse to the foreign articles of this class; especially when such articles are only to be procured at a high price: a circumstance which not unfrequently becomes a source of the adulteration of medicines, in this and in other countries.

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* *Materia Medica Americana*, &c. p. 27. Schoepf calls the plant, Wild-Succory.

† *Flora Caroliniana*, &c. p. 87, 88.

‡ *Flora Boreali-Americana*, &c. Tom. i. p. 96, 97.

IN the First Part of this work, I made some mention of two American species of Cornel, or Dog-wood, the *Cornus florida* and *Cornus sericea**. Since the publication of that part, these two vegetables have engaged the attention of an ingenious graduate in the university of Pennsylvania, Dr. John M. Walker, to whom we are indebted for much interesting information concerning them†. An analysis of the dissertation would not, I presume, be uninteresting to my readers. But I cannot undertake the task in this place. I think it a duty, however, to mention some of the author's experiments and observations.

THE taste of the barks of the two Cornels, and that of the Peruvian bark, is nearly similar, "though somewhat more bitter and astringent in the Corni than the bark: the former when retained in the mouth some time, only impart to the tongue these two tastes, along with a pleasant warmth; whereas when the latter is retained the same length of time, along with this bitterness and astringency, it imparts an indescribable taste, which will be easily recognized by every one who has taken the bark."

DR. WALKER'S experiments show, "that the *Cornus florida* and *sericea*, and the Peruvian bark, possess the same ingredients, that is gum, mucilage, and extract, which last contains the tannin and gallic acid, though in different proportions. The Florida possesses most of the gum, mucilage, and extract; the

* See pages 11, 12, 45.

† An Experimental Inquiry into the similarity in virtue between the *Cornus Florida* and *Sericea*, and the *Cinchona officinalis* of Linnæus, &c. &c. Philadelphia: 1803.

“Sericea the next, which appears to be an intermediate
“between the Florida and Peruvian Bark; while the
“latter possesses most of the resin. Their virtues ap-
“pear equally similar in their residence. The extract
“and resin possess all their active virtues. The extract
“appears to possess all their tonic power. The resin,
“when perfectly separated from the extract appears to
“be purely stimulant*.”

OUR author has established the stimulant power of
the two Cornels, by actual experiments upon the healthy
system. By the use of these medicines, the pulse was
often rendered fuller and stronger, and always quicker†.

THE bark of the *Cornus sericea* forms a beautiful
tincture with proof spirits. This is deserving of a
place in the shops, as are, also the powdered barks of
both species.

I CAN add but little from my own experience, con-
cerning the application of these two species of *Cornus* to
the cure of diseases. I believe, however, that it may,
with entire safety, be asserted, that as yet we have not
discovered within the limits of the United-States, any
vegetables which have been found so effectually to answer
the purpose of the Peruvian bark, in the management of
intermittent fevers, as the *Cornus florida* and *Cornus*
sericea.

IN an intermittent fever, which prevailed in West-
New-Jersey, about twenty-four years ago, the bark of
the *Cornus florida* was found more useful than the Pe-

* An Experimental Inquiry, &c. page 29.

† Ibid. page 46.

ruvian bark. It was used in the shape of a decoction*. I must candidly confess, however, that I have heard of more instances of the failure of this Cornel than of the Peruvian bark. But has any vegetable so completely prevented the recurrence of the paroxysms of intermittents as the last mentioned one? In the mineral kingdom, indeed, we have discovered an inestimable substitute for the bark: I mean Arsenic. This, particularly I think, when it is given in substance†, will more certainly cure the intermittent than any vegetable yet known, the Peruvian bark excepted. But I am inclined to think, that relapses are more common after the employment of arsenic than after that of the bark. BESIDES, ARSENIC CANNOT ALWAYS BE USED WITH ENTIRE SAFETY. In illustration of this position, I may here observe, that I myself have seen three cases of very general oedema of the face and limbs (especially the former) evidently induced by arsenic. Two of the subjects were children,

* From the information of my learned friend, the Reverend Dr. Nicholas Collin, of Philadelphia.

† I have, for several years, employed the oxyd of arsenic in substance, in preference to Dr. Fowler's solution. I think it a much more certain medicine than the solution. I commonly give it in combination with opium. One grain of the arsenic is united to four or eight grains of opium, and made into a mass with conserve of roses, or honey, or soap. This is divided into sixteen pills, of which I direct the patient (an adult) to take two or three at different periods, in the course of the day and night, *especially during the apyrexia*. Such are the powers of this medicine, that two grains of it are often sufficient to cure an intermittent, that has continued for weeks! Sometimes I use larger doses; but in a majority of the cases that have come under my notice, I have found three sixteenths of a grain of arsenic sufficient for the period of twenty-four hours. As children are, with difficulty, prevailed upon to take the medicine in the shape of a pill, I rub down the arsenic with honey or melasses and water, and sometimes with a portion of gum-arabic. In this form, it is very conveniently given to children, by drops; and the quantity of the mineral, in each dose, may be estimated with considerable accuracy.—In the cure of intermittents, does arsenic operate by virtue of its tonic power?—The Peruvian bark sometimes cures intermittents that have resisted the powers of arsenic.

and the third an adult. They all recovered, without experiencing any other inconvenience from the medicine. I have also seen a case of *temporary* paralysis (or perhaps rather extreme debility) of the limbs induced by the medicine, in a patient labouring under an obstinate intermittent. These notices may, possibly, be of some use to the very young and inexperienced practitioner, for whom principally they are thus candidly mentioned.

THE spirituous tincture of the bark of the *Cornus sericea*, already mentioned, has been advantageously used in the latter stage of diarrhoea, unaccompanied with fever*.

I HAVE already made mention of the *Magnolia glauca*.† The bark of this tree is celebrated among the Western Indians, as a remedy in rheumatism, and in fevers. The tree grows, in great profusion, upon the river Kan-haway, whither the Indians resort for the purpose of procuring the bark, which they carry off, in great abundance. Employed in the shape of a decoction, it “proves gently cathartic and ultimately sudorific.” A cold infusion and a tincture of the bark are much used in intermittents. “In one case of inflammatory rheumatism it “seemed to produce considerable effect and relief, as a “sudorific, after blood-letting had been premised.” It is known by the names of Elk-Bark and Indian Bark‡. From the former name, I presume the bark is eaten by the American Elk, or *Cervus Wapiti*. We know it is eaten by the Beaver: hence one of the English names of this tree, viz. Beaver-tree.

* From the information of Dr. Amos Gregg, jun.

† See Part First, pages 13, 14.

‡ From the information of my friend, Charles Everett, M. D. of Milton, Albemarle-County, Virginia.

FOR further information concerning the medical and other properties of this vegetable, I refer the reader to Dr. Thomas D. Price's *Inaugural Dissertation on the Magnolia Glauca, or Common White Laurel-tree**.

THE bark of the *Prunus Virginiana* (*Cerasus Virginiana* of Michaux), which I have mentioned in the First Part of these *Collections*†, is considerably bitter and astringent. These qualities are accompanied with some aromatic warmth. It has been justly observed, that "there is a great similarity between the flavour of this bark, and the skin enclosing the kernels of the peach stones‡." This bark also possesses an evident narcotic quality, to which it is highly probable, that some of the useful qualities of the medicine, in certain cases, must be ascribed. It is manifestly stimulant. The bark of the root seems to be more powerful than that of the trunk.

MY own experience with this vegetable has been inconsiderable. The experience and observations of others, however, lead me to believe, that it is a medicine well worthy of the notice of physicians. In some parts of the United-States, the bark has been much employed in intermittents, in which it is said to have been found as efficacious as the Peruvian bark. This I am not willing to believe. But as it is a durable tonic, there is little reason to doubt, independently on actual observations, that it is deserving of attention in this common disease.

THE bark has also been found useful in certain cases of dyspepsia, in consumption of the lungs, and in lum-

* Philadelphia: 1802.

† See pages 11 and 34.

‡ Dr. Morris.

bar abscess, attended with hectic fever, and colliquative sweats. Of its use in this latter case, we have an instance in the *Medical Repository**. The patient made use of a decoction of the bark. It would be easy to mention many other diseases in which this medicine has been advantageously employed.

I HAVE already observed†, that the leaves of this tree are poisonous to certain animals. Dr. Morris has shown, that the distilled water of the leaves is a powerful poison to different species of animals, such as kittens, pigeons, &c. About a tea-spoonful of the water killed a "pigeon fully fledged," in thirty-two minutes. This gentleman was obliged to make his experiments upon the young and imperfectly-expanded leaves of the tree. The adult leaves are doubtless more powerful. Experiments would seem to show, that the deleterious principle of the leaves is of a very volatile nature‡.

UNDER this head of tonics, I may, with some propriety, take notice of the *Eupatorium perfoliatum*. I am sensible, however, that this vegetable might be more advantageously treated of under several different heads, such as those of Emetics, Sudorifics, &c., than under one individual head. But as a tonic quality is, unquestionably, attached to this plant, and as I am not, in these *Collections*, particularly studious of method, I shall bring together all I have to offer concerning the *Eupatorium*, under one point of view. Of this very common plant in almost every part of the United-States, I have made

* Vol. v. No. III.

† Part First, page II.

‡ See an Inaugural Dissertation on the *Prunus Virginiana*, &c. &c. By Charles Morris, of Virginia. Philadelphia: 1802.

mention in the First Part of these *Collections**. It is the *Eupatorium connatum* of Michaux. Besides the provincial or common English names which have already been mentioned, it is known by the following appellations: viz. Thorough-stem, Cross-wort, Bone-set, and Indian-Sage. The first of these names has been imposed upon it from the peculiar structure of the leaves, which are opposite, and appear as though the stem was thrust through them. It has received the name of Cross-wort, by which it is known in many parts of Virginia, from the position of the leaves, each pair of which (in general) take their origin from opposite sides of the stem, so that they cross each other nearly at right angles. I am more at a loss to refer the word Bone-set to its real origin: but I presume the plant received this name, from the great relief which, on many occasions, it has been known to afford to persons labouring under violent remitting and other fevers, in which the bones are greatly pained. The resemblance of the leaves of this plant to those of the Common Sage (*Salvia officinalis*) was long ago remarked by the botanists†. Hence the name Indian-Sage, by which this *Eupatorium* is known in some parts of Pennsylvania. We have seen that it is one of the remedies of the Indians‡.

I HAVE already hinted at the obvious properties of the *Eupatorium*, and have observed, that it has been used in intermittents, and other fevers§. I am now to remark, in consequence of subsequent inquiries, that the plant has been exhibited, with uncommon advantage, in

* See pages 27, 52, 53.

† Particularly by Plukenet, who thus defines the plant: "*Eupatorium Virginianum, Salviae foliis longissimis acuminatis, perfoliatum.* Alm. Bot. 120. t. 86. f. 6

‡ Part First, p. 27, 52, 53.

§ Part First, p. 27, 53.

these affections. In simple intermittents, admitting of distinct intermissions, a decoction of the whole plant, or the leaves in powder, have, on many occasions, proved effectual in preventing the recurrence of paroxysms. I now speak of the medicine, as exhibited during the time of intermission. But the vegetable, especially in the form of a decoction, has often been given during the time of the hot stage, and I am in possession of a large portion of testimony in favour of its efficacy when thus employed. Not only in intermittents, but likewise in remittents, and in the malignant yellow-fever, as it has prevailed in Philadelphia, &c., has our plant been used, with much advantage. When exhibited in the form of a *warm* decoction, it has seemed to prove peculiarly beneficial, especially by exciting a copious perspiration. The effect of the medicine, in inducing this evacuation, constitutes one of its most valuable properties, and has procured to it an appellation (that of the "vegetable antimony") to which, I believe, it is as well entitled as many other vegetables, which might be mentioned. But I greatly doubt if the sudorific effect of this plant, when unassisted by heat, can be compared to that of the *Polygala Senega*, and several other American plants. It often proves emetic: but this operation, which on many occasions, is not the least useful of its properties, may be prevented by a proper attention to the medicine. In some parts of the United-States, it is exhibited in intermittents, chiefly with a view to its emetic effect.

THE *Eupatorium* has been used in other cases. It is said to have been found very useful in a peculiar and distressing affection of the herpetic kind, which was formerly very common in Virginia, and there known by

the name of the "James-river Ringworm;" because it was especially prevalent among the inhabitants residing upon the upper streams of James-River. This disease was particularly disposed to affect young men. It attacked the thighs, the scrotum, and especially the parts immediately adjacent to the anus. It extended its ravages into the rectum, and perhaps much further. It was at all times, a disgusting and troublesome disease, though it rarely proved mortal.

MR. JEFFERSON* informed me, in 1802, that within the period of his remembrance, this herpes was extremely common in Virginia, and that it had gradually disappeared or become less common, from about the time † that the Warm and Hot Springs, in the county of Bath, in Virginia, had been better known, and more frequented. He ascribed the disappearance of the affection to the use of these waters; the temperature of the former of which is about 98°: that of the latter 106°, of Farenheit's thermometer.

IN this affection, the *Eupatorium perfoliatum* has often been found very beneficial, as I have been informed by a respectable physician‡ in Virginia. The patient drank a decoction of the plant, and continued the use of it for a considerable time. It sometimes puked: it, no doubt, purged; and, in all probability, it operated as a sudorific. But by what quality it more especially operated, in curing the disease, I am unable to say. The fact may, I believe, be depended upon.

* The President of the United-States.

† These waters were certainly known at least as early as 1750 or 1760. But I believe they did not begin to be frequented, by any considerable number of persons, until some years after. The James-river Ringworm was very prevalent about the year 1766.

‡ Dr. Thomas Knox, of Culpeper.

It may, perhaps, serve to increase our confidence in the powers ascribed to the *Eupatorium perfoliatum* as a remedy for herpes, to observe, that the *Aya-Pana*, which of late has excited so much attention, is a species of this vast family of plants, and that it also has been celebrated as a remedy in certain affections, somewhat allied to herpes*.

I CLOSE this article by observing, that every part of the *Eupatorium perfoliatum* may be advantageously employed in practice. I believe, from my own observations, that the flowers possess the greatest portion of the activity of the plant; and they ought to be kept in the shops. As a tonic bitter, I deem them superior to the flowers of Camomile, (*Anthemis nobilis*), for which they might be substituted, on many occasions.

SECTION III. STIMULANTS, OR INCITANTS.

§ I. GENERAL STIMULANTS.

KALMIA latifolia†. The powdered leaves of this vegetable have been used, with much success, in some cases of intermittents‡. A saturated tincture, prepared from the leaves with a proof spirit, is an active medicine,

* See Mr. Tilloch's valuable *Philosophical Magazine*, &c. Vol. xiii. p. 376, &c. &c.

† See Part First, p. 18, 48.

‡ Dr. Amos Gregg, jun.

and perhaps worthy of a place in the shops*. For some interesting information concerning the powers of this species of *Kalmia*, and also those of *Kalmia angustifolia*, or Narrow-leaved *Kalmia*, commonly called Lambkill, &c., I beg leave to refer the reader to Dr. George G. Thomas's *Inaugural Dissertation* concerning these plants, published at Philadelphia, in 1802.

LAURUS Sassafra. In the First Part of this work, I have made mention of the oil of this vegetable, and have hinted at its affinity to camphor†. The resemblance between the two articles is further evinced by this circumstance, that the oil of *Sassafra*, when externally applied to the body in rheumatic and gouty affections, is remarkable for its power of shifting the pain from its original seat; *but not always to the advantage of the patient*. Like camphor, therefore, it ought ever to be used, in such affections, with great caution. I believe, however, that it is a medicine well adapted to many cases of rheumatism, in its chronic stage; though even here it may prove injurious.

THE *Phytolacca decandra*, well known by the names of Poke, Garget, American Nightshade, &c., is one of the most common North-American plants. It is, certainly, a plant of great activity, though the young shoots, when boiled, may be eaten with impunity, and are justly deemed a great delicacy. By many, they are preferred to the finest asparagus.

SOME of the medicinal powers of this plant have long been known. The ripe berries, infused in brandy,

* A few drops of this tincture, poured upon the body of a large and vigorous rattle-snake, in my possession, killed the reptile in a very short time. It violently affected the animal, *almost instantaneously*.

† Pages 19, 20.

or wine, especially the former, are a popular remedy for rheumatism, in many parts of the United-States. This tincture of Poke (*Tinctura Phytolaccae*) is certainly a valuable medicine in cases of chronic rheumatism, and other similar affections. Like the volatile tincture of gum Guaiacum, it has sometimes done injury; as might indeed be expected from an active medicine, in the hands of the injudicious or ignorant. It may, I believe, be safely exhibited in most of the cases of rheumatism, in which the Guaiacum has been used with safety and advantage. In the rheumatic affections, which frequently succeed to the venereal disease, it seems to be a more valuable medicine than the Guaiacum, and may be advantageously employed, especially along with calomel, or other preparations of mercury. I have employed the ripe juice of the berries, inspissated to the state of an extract, in some cases of scrophula. The juice, in the same state, has, I am informed, been advantageously employed in cases of cancerous ulcers. These ulcers were dressed with the extract, spread upon linen, or upon the leaf of the plant. But the juice of the leaves, applied in the same manner, is said to have been found more efficacious. I am inclined to repose some credit in the testimonies which I have collected concerning the utility of the extract of Poke, in the cases just mentioned.

THE reader may consult, with advantage, *An Inaugural Botanico-Medical Dissertation on the Phytolacca Decandra of Linnæus*. By Benjamin Shultz*. As a repository of facts concerning the Phytolacca, this dissertation is valuable, and worthy of attention. But the subject is still, in a great measure, a new one.

* Philadelphia : 1795.

ARUM triphyllum*. The recent root of this plant boiled in milk, so as to communicate to the milk a strong impregnation of the peculiar acrimony of the plant, has been advantageously employed in cases of consumption of the lungs. I have heard of one case (that of a negro man in Virginia) who was completely cured of a pulmonary consumption by continuing to take, for a considerable time, milk in which the root of the Arum had been boiled. It would certainly be worth trying this simple prescription in some cases of a disease which so generally baffles the powers of all our medicines, and the skill of the best physicians. I am not ignorant, that within the period of a very few years, the disease of consumption has been supposed to be deprived of some of its terrors; but I must add, with real regret, that notwithstanding the high encomiums which have been bestowed upon the Digitalis as a remedy for this disease, by some distinguished medical philosophers, and practitioners†, I have employed this vegetable in a considerable number of cases of consumption, and, upon the whole, with very inconsiderable *permanent* advantage. In one case, indeed, it *seemed* to perform a cure of what I deemed genuine phthisis: in several other cases, it evidently and remarkably affected the pulse, and moderated the urgency of the symptoms; but the patients ultimately fell victims to the disease. Some of the patients to whom I exhibited the Digitalis were so far advanced in the disease, that little benefit could have been expected from medicine of any kind: but others of them again were in the earlier stages of the disease, and consequently in a situation that seemed to admit of permanent relief, from

* Part First, p. 21, 49, 50.

† Mr. Saunders, Dr. Thomas Beddoes, Dr. N. Drake, &c. &c.

this or from other medicines. Yet, with the exception of the case already hinted at, I have not been able to effect a single cure by means of *Digitalis*. I am even inclined to think, that I have, in several instances*, more considerably arrested the progress of phthisis pulmonalis by means of emetics (particularly the sulphat of zinc, exhibited in the manner recommended by Dr. Moseley†) than by *Digitalis*. Candour compells me to add, that my own experience with the *Digitalis* in consumption has been less than that of several other practitioners in Philadelphia, some of whom entertain a more favourable opinion of the medicine, as a remedy for consumption, than I do.

DR. STORCK, of Vienna, has called the attention of physicians to a species of *Clematis*, or Virgin's-Bower, the *Clematis recta*‡. This is a very acrid and active plant, which Storck recommended in cancerous, venereal and other malignant ulcers, and also in obstinate pains of the head, and bones, and in other diseases. An infusion of the flowers or leaves, and an extract of the plant were used internally. The powder was sprinkled upon the ulcers, where it was found to act as an excellent escharotic and detergent.

I DO not know that the *Clematis recta* is a native of any part of America. I have been led to mention the plant in this place, because the United-States afford us some species of the same genus, which, from a few experiments that I have made with them, promise to be useful in medicine. The species which I have more par-

* Especially in the Pennsylvania Hospital, in the summer of 1803.

† A Treatise upon Tropical Diseases, &c. &c. p. 541, &c. London: 1792.

‡ Upright Virgin's-Bower. Storck calls the plant *Flammula Jovis*. It is a native of Austria, Hungary, Switzerland, and France.

ticularly attended to, are *Clematis crispa*, and *Clematis Viorna*. The leaves of these species are extremely acrid, and may be found useful in chronic rheumatism, palsy, old ulcers; and, in fine, in all the diseases in which Storck found the *Clematis recta* useful*. As they are very active plants, it is necessary to use them in small doses. I have received some obscure information concerning the employment of one of the species (I think *C. crispa*), in Virginia, as a remedy in some particular affections.

DR. SCHOEPF has made no mention of these plants, but has proposed the employment of *Clematis Virginiana*, as a substitute for *Clematis recta*†. The *C. Virginiana* is a much more feeble plant than either of the three other species which have been mentioned.

§ II. TOPICAL STIMULANTS.

THE *Pyrola umbellata*, already mentioned, may be noticed under this head. The bruised leaves of this plant, when externally applied, sometimes induce redness, vesication and desquamation of the skin. But this is by no means a constant operation of the vegetable; and, therefore, it does not seem particularly worthy of our attention, in this point of view.

Rhus radicans‡. The following observations, relative to the deleterious property of this common plant,

* See Elements of Botany, &c. Part Third. p. 70.

† Materia Medica Americana, &c. Præfatio. p. xlii.

‡ See Part First, p. 23, 50, 51, 52.

will not, I hope, be unacceptable to those who are interested in a knowledge of its natural history. The person who is the subject of the observations, has, for many years, been severely affected by the plant; and although many other persons are similarly affected, it is not often, I believe, that the progress of the poison is marked with minute attention in those who are injured by it.

ON the eighth day of July, 1795, I applied two or three drops of the milky juice whilst it issued from the common foot-stalk of the leaves of the *Rhus radicans*, to the risband of my shirt. These leaves, immediately before, had been torn from the stalk of the plant, by a friend of mine*. My object, in applying the juice, was to determine, in what length of time it would assume the black hue. In a few minutes, I found that the linen was stained black, and in a short time after this, I observed that the juice had penetrated through the risband, and that it had communicated a dark brown or blackish colour to that portion of the epidermis which was immediately under it. The day was unusually warm, and I went into the water to bathe. In the evening, I felt a considerable itching of my wrist, and the following morning observed, that there were upon it a number of extremely minute vesicles, which contained a fluid more or less limpid, or transparent. The itching increased hourly: the wrist and the middle of the fore-arm began to swell, and the vesicles extended themselves rapidly, chiefly upwards, towards the elbow, and partly downwards, along the lower part of the wrist and upon the fingers.

* I was not myself within the sphere of the action of the plant, which I was careful to avoid, well knowing, from long experience, its injurious effects upon me.

MEANWHILE, vesicles accompanied with, and preceded by, itching more or less troublesome, made their appearance, upon various other parts of the body. The face was universally sprinkled with them. But these were extremely small, the fluid which they contained, was always very limpid, and without any application, except that of cold water every morning, they entirely disappeared in two or three days.

ABOUT the seventh or eighth day, the itching, the inflammation, and the spread of the vesicles appeared to be nearly at their height. At this period, and for some days afterwards, the greater part of the fore-arm, and about one third of the arm were swelled to nearly twice the natural thickness; the itching was intollerable, and the vesicles, in general, were no longer filled with a limpid fluid, but contained a thick matter, or pus, very similar to that of small-pox, and strongly adhering to the linen.

ON the ninth day, I perceived a swelling in the axillary gland of the right arm, which was that to which the lacteous juice was applied, and which was chiefly affected. The swelling rapidly encreased, until it became of the size of a hen's egg, and on the second day from its appearance, it had almost entirely evanished.

FROM the period that the swelling was at its height, to its entire disappearance, the itching was almost universal, and much more insupportable than it was before. I attributed this itching to the influence of the poison, which, I suppose, was conveyed into the system, from the time that the axillary gland began to swell and inflame. Nevertheless, I could not discover that there

was, in consequence of this supposed absorption of the poison, any increase of the number of vesicles upon the surface of the body.

IN fifteen days from the time that the poison was first applied to my arm, all the disagreeable symptoms had ceased; the vesicles had almost entirely disappeared; a desquamation of the affected parts had taken place, and a new epidermis had been formed.

FROM the foregoing statement, it must appear evident, that to some constitutions the milk-like juice of the *Rhus radicans* is capable of producing very disagreeable effects. It must not, however, be imagined that these effects are equally disagreeable to all constitutions; and it is certain that there are *many* persons who are not at all affected by this plant.

IT has been asserted, that persons of the most irritable habits of body are the most liable to be effected by the *Rhus radicans*, and by some other species of the same genus. I do not intend to oppose myself as an exception to this position; but from the recollection of the constitutions of several persons to whom this poison has been applied, I have very little hesitation in asserting, that the susceptibility of receiving its influence is by no means proportional to the degree of irritability, whether muscular or mental, of the habit. It may, I believe, be asserted with much more truth, that the susceptibility of receiving the influence of the poison of the *Rhus radicans* is somewhat proportional to the delicacy and thinness of the epidermis and skin. Hence, no doubt, it is that females are more liable to be poisoned by this plant than males; that the face is seldom so much affected by

it as the arms, the genitals, and most other parts of the body that are protected from the constant influence of the air; and that young persons are more frequently poisoned than those who have arrived at the age of manhood, or who have passed to the term of older age.

I HAVE said, that there are many persons who are not, in the least, affected by the poison of the *Rhus radicans*, externally applied. This is an undoubted fact. Some of these persons after expressing the juice of the plant, will rub it upon their arms, and other parts of their bodies, without experiencing the smallest injurious effect. I am acquainted with two gentlemen, who find no ill effects from chewing, for a considerable time, the recent leaves of this plant. It deserves to be mentioned, that one of the gentlemen, I allude to, is liable to be considerably injured by the effluvia of the *Rhus radicans*, when applied to the external surface of his body.

It may not be improper to observe, in this place, that several other native plants besides the species of *Rhus*, and the *Pyrola umbellata*, induce in certain persons, a vesicular state of the skin. The flowers of the *Kalmia latifolia*, or Broad-leaved Laurel, have been known to do this in some persons. I knew an elderly lady who was affected, in the same way, by the *Nerium Oleander*, or Common-Oleander, or Rosebay. But this last is not an American vegetable.

A DECOCTION of the bark of the *Rhus radicans* has been used, with seeming advantage, in some cases of consumption of the lungs, in different parts of Pennsylvania. A gentleman of my acquaintance (who has since fallen a victim to the disease) informed me, that he had certainly found much benefit from this decoction in a

pulmonary affection, complicated with *fistula in ano*. A decoction of the root of the plant is said to have been advantageously employed in cases of asthma.

A LATE writer, M. du Fresnoi, strongly recommends the *Rhus radicans*, in the treatment of herpetic affections, and in paralysis. In the first of these cases, he employed the infusion and the distilled water of the leaves of the plant. He relates seven cases, which seem to establish, unequivocally, the efficacy of these preparations in the affections which I have mentioned. He says he cured five cases of paralysis by the use of the plant*. Dr. Alderson informs us, that he has used the *Rhus Toxicodendron*, with much benefit, in the same disease†.

THE bark of the *Rhus glabrum*, or Smooth Pennsylvania Sumach‡, boiled in milk, has been recommended as a remedy for chronic ulcers; and, I am informed, has been found very useful. The ulcers are often washed with the decoction.

SECTION IV. SIALAGOGA.

I HAVE nothing additional to say under the head of particular ERRHINES, and therefore proceed to the section of SIALAGOGA, or SALIVATING medicines. Between these and the Errhines, there is a very great affinity; as

* Des proprietes de la plante, appelee, *Rhus radicans*; de son utilite, &c. &c. A Leipsic: 1788. I have not seen the original work.

† An Essay on the *Rhus Toxicodendron*, or Pubescent Poison-Oak, or Sumach, &c. By John Alderson, M. D. Hull: 1796.

‡ Part First, p. 51.

is evinced by this circumstance, that several articles of the materia medica, both minerals and vegetables, very frequently act by increasing the secretion by the nose, and also that by the salivary glands. This is remarkably the case with respect to the sulphat of mercury, or turpith-mineral; and, in one instance, I think I have seen a salivation decidedly induced by the use of the turpith mineral, in combination with tobacco, that had been used, for some weeks, as an errhine. This will the more readily be admitted as a fact, when we read, that a very extensive salivation of long continuance, has been apparently induced by an irritation applied to the parotid gland, through the medium of the *meatus auditorius*. The irritating substance was a portion of fetid wool*. It would be an easy task to cumulate facts to prove, that "the number of salivating medicines is much greater than has been commonly imagined †."

POLYGALA Senega, or Seneca Snake-root‡. My ingenious pupil, Dr. Thomas Walmsley has lately communicated to me an additional instance of the salivating power of this active vegetable. The patient (a lady aged about years) had taken, for some time, a decoction of the Seneca, and was thrown into a profuse ptyalism, which continued for a considerable time.

It is a well-ascertained fact, that the disease of tetanus has often been induced by different poisonous vegetables: by *Datura Stramonium*, *Hyoscyamus albus*, or White-Henbane, not to mention several others. The

* See Medical Transactions, published by the College of physicians in London, vol. II. p. 34. &c.

† See Part First, p. 24.

‡ See Part First, p. 25.

same disease is likewise sometimes induced by the *healthy* or natural poisons of certain animals. I have collected two well-authenticated instances of the production of this disease, by the bites of venomous serpents, in the United-States. One of the patients died. The tetanus did not come on until six or seven days after she was bitten. The other recovered from the disease, by the use of large doses of the Seneca, boiled in milk*. I know not whether this instance of success should encourage us to hope that the Seneca might be given, with advantage, in those cases of tetanus which are the consequence of wounds, in different parts of the body. I fear that our vegetable, though by no means a feeble one, will be found unequal to the cure of this terrible disease.

THE *Zanthoxylum Clava Herculis* and *Zanthoxylum fraxinifolium* are both mentioned in the First Part of these *Collections*†. They are both vegetables endued with very active powers. The bark promises to be a very useful medicine in cases of paralytic affections of the tongue, or of the muscles concerned in deglutition: and in such cases, when held in the mouth, they have been employed with advantage‡. They are more active than *Mezereon* (*Daphne Mezereum*), which both Dr. Withering§ and myself have employed, with a good effect, in the same cases. It might, perhaps, be worth trying the *Zanthoxyla*, as masticatories, in some cases of stammering.

IN some parts of Virginia, the berries of *Zanthoxylum fraxinifolium* are much esteemed as a remedy in

* See Elements of Botany, &c. Part Third, p. 105.

† See p. 25, 52.

‡ By Dr. Tucker Harris, of Charleston, South-Carolina.

§ A Systematic Arrangement, &c. vol. II. p. 370.

violent cholicky affections. A spirituous infusion of the berries is employed. They are known by the name of "Suter's-berries."

FOR some interesting notices concerning the use of the bark of *Zanthoxylum Clava Herculis*, in rheumatic affections, in ulcers, &c. &c. &c., I refer the reader to different communications, in the *Memoirs of the Medical Society of London**, and other periodical publications.

SECTION V. EMETICS.

SPIRÆA trifoliata†. This is sometimes very injudiciously employed by the country-people, insomuch that they are obliged to apply for medical aid to remove the debility induced by the large doses of the root which they employ. "It is said, that there grows in the state of Kentucky, another species, which is still more valuable, as an emetic, than the *S. trifoliata*‡."

THE emetic power of the *Sanguinaria Canadensis*, of which I have taken notice in the former part of this work§, has been fully established by the experiments of Dr. Downey, in his ingenious essay upon this plant. The "most prominent effect" of the medicine is to induce vomiting, even when it is exhibited in moderate doses. "When taken in the dose of fifteen or twenty grains," it exerts powerful emetic qualities. "But in consequence of the irritation, which is produced in the fauces, it is

* Vol. V.

† Part First, p. 26.

‡ Elements of Botany, &c. Part III. p. 89.

§ Page 27.

“probable, that in the form of a powder, it will never
 “come into general use. This inconvenience may, how-
 “ever, be obviated, by giving it in form of a decoction
 “or extract.” When managed with care, it is deemed
 “but little inferior to the ipecacuanha, either in the cer-
 “tainty or speediness of its operation*. The powder of
 “the root may be given as an emetic for an adult, in the
 “dose of fifteen or twenty grains, made into pills, other-
 “wise a considerable irritation will be produced in the
 “fauces in taking it†.”

HITHERTO, the Sanguinaria has been but little em-
 ployed by the regular practitioners. It promises, how-
 ever, to be an useful medicine, particularly on the foun-
 dation of its emetic and expectorant effects, in cases of
 cynanche maligna, or ulcerous sore-throat, in cynanche
 trachealis, or hives, and other similar affections. Its
 properties seem to be considerably allied to those of the
 Seneca Snake-root, which has been so beneficially em-
 ployed in the same cases‡. I have received an account
 of its having been employed, in the shape of a decoction,
 with very evident good effect, in the case of that partic-
 ular form of cynanche trachealis, which Dr. Darwin has
 named *Peripneumonia trachealis*§. The medicine proved
 emetic, and the patient recovered.

* An Investigation of the properties of the Sanguinaria Canadensis, or Puccoon.
 By William Downey, of Maryland. Philadelphia: 1803.

† An Investigation, &c. pages 23, 25.

‡ See Part First, p. 33, 34, 54, 55.

§ Zoonomia, or the Laws of Organic Life. Vol. I. The disease of hives appears
 under several different shapes, in all of which the trachea seems to be essentially
 affected. In the course of my practice, I have met with some cases, which answer
 precisely to Darwin's description, and for which I think the term peripneumonia
 trachealis is a very appropriate one. If I do not mistake, this form of the disease,
 in general, more readily admits of early and complete relief than any of the other
 shapes in which it appears.

I HAVE already observed, that the seeds of the *Sanguinaria* "appear to possess nearly the same quality as the "seeds of *Datura Stramonium**,." That is, they induce fever, delirium, dilatation of the pupil of the eye, &c. Dr. Downey concludes, from a few experiments, which he made with the "unripe seeds," that they possess a very considerable influence over the pulse, and "a stupifying or narcotic quality†." A deleterious property evidently resides in the leaves of the plant‡ as well as in the seeds.

SECTION VI. CATHARTICS.

UNDER this head, in the former part of the work §, I have mentioned the *Asclepias decumbens*, commonly called *Pleurisy-root*, *Flux-root*, &c. The root of this plant does, unquestionably, possess a purgative quality. But this does not seem to be the most valuable part of its properties. It is said to possess a remarkable power of affecting the skin, inducing general and plentiful perspiration, without greatly increasing the heat of the body. Accordingly, I find it is much employed by the practitioners of medicine in some parts of the United-States, particularly, I believe, in Virginia, as a remedy in certain forms of fever, in pleurisy, and other affections. The root is used both in powder and in decoction.

* Part First, p. 27.

† An Investigation, &c. p. 24.

‡ Ibid. p. 24.

§ Page 29. See, also, page 53.

Sometimes, it is used in combination with antimonials. The decoction often induces perspiration, when other medicines have failed to produce this effect. A physician*, who has been much in the habit of employing this Asclepias, informs me, that 'in the low states of typhus fever, he has more frequently observed a perspiration to succeed to the use of the Asclepias than to any of the sudorifics that are generally used.'

ABOUT thirty years ago, this vegetable was strongly recommended, as a specific for pleurisy, by a Mr. Thomson Mason, of Virginia. After the use of an antimonial emetic, and the loss of some blood, he gives his patients "as much of the Pleurisy-root, pounded very fine, and then searched through a fine search, as will lie upon a tolerable broad case knife, in a cup of warm water, and repeats the dose every two hours, until the patient is perfectly recovered, which happens frequently after three days, and never fails freeing him from pain after six." Mr. Thomson assures us, that by these simple means, he "has cured hundreds, and never failed in a single instance."

It does not appear, that Mr. Thomson was a regular physician; but I have been led to mention his practice the more particularly, because his publication seems to have first called the attention of the public to the virtues of the Pleurisy-root, and I know that some very respectable physicians, in Virginia†, have reposed not a little

* Dr. Charles Everett. Letter to me, dated Milton, October 23d, 1803.

† Among others, my friend, the late Dr. James Greenway, of Dinwiddie county, in Virginia. From this gentleman, I received a copy of Thomson's paper, which I think first made its appearance in an Almanac, in 1773.

confidence in the powers which our author has ascribed to the medicine, as a remedy in the cases in which he employed it.

FROM Mr. Thomson's publication, it also appears, that the Pleurisy-root may be given in pretty large doses, perhaps about half a dram, several times in the course of the day. Indeed, I find that the Virginia physicians are not very nice in the doses of this medicine, when they prescribe it.

It seems that Mr. Thomson entirely confined himself to the use of the *Asclepias decumbens*, or the species with beautiful orange-coloured blossoms. He observes, however, that there are two other species of the Pleurisy-root, which are known by the name of "Butterfly-weed." It is probable, therefore, that these two kinds (one of which I take for *Asclepias Syriaca*, well known by the names of Wild-Cotton, and Cotton-plant) have sometimes been used for the *Asclepias decumbens*; and it is not unlikely, that a common assemblage of properties belongs to a number of the species of this fine family of plants. *Asclepias Vincetoxicum*, which is a native of Europe, has been recommended by some writers on the *Materia Medica*, as a remedy for dysentery, and other diseases.

I have already mentioned* the extract of the *Juglans cinerea*†, or Butternut-Walnut. This appears to me to be one of our most valuable native cathartics. It is well adapted to the treatment of dysentery, in which, however, it seems to operate merely as a laxative. A decoction of

* See Part First, p. 31.

† *Juglans oblonga alba* of Marshall.

the inner bark (*liber*) of the tree has been very advantageously used as a cathartic, in that malignant fever of our horses, called the yellow-water, which I formerly noticed*.

THE green or unripe fruit of this vegetable is considerably acrid, and when applied externally to the skin, induces some irritation there. Advantage has been taken of this property by the country-people in some parts of the United-States. They apply the cut end of the fruit to those milk-white spots which often appear upon different parts of the body, and seem to arise from a removal of the *rete mucosum*, or perhaps rather its colouring matter, from the skin. A surgeon, whom I met with in the remote parts of the state of New-York, in the year 1797, informed me, that he had known the Butternut employed with the effect of entirely removing the white *maculæ*, or spots in some persons. I should have confidently ascribed the removal of these spots to the stimulant operation of the juice of the nut, if I had not been assured, that similar affections are sometimes removed by the simple application of cream and other articles, which can hardly be supposed to operate by virtue of a stimulant power. I am, however, the more inclined to ascribe the removal of the spots to the stimulant action of the nut, because in a case of this kind, that came under my own notice, I found much advantage from the application of a blister of cantharides to the affected parts. The spots were not only prevented from increasing, but were very sensibly diminished in size, by the action of the cantharides. I have the satisfaction to believe, that by this simple treatment, I prevented the colouring matter of the mucous membrane from being entirely removed from one side, at least, of the face.

* See Part First, p. 12.

I SHALL close this article by observing, that the spots of which I have been speaking, are mentioned by different writers, but by none, I believe, more particularly or correctly, than by my learned friend Professor Blumenbach, of Gottingen. After speaking of the white spots which often make their appearance upon the bodies of negroes, and other dark-coloured people (see his section *cutis fusca maculis candidis variegata*), he has the following words: "Niveae vero istae et aequabiles mollesque
 "maculae quae non nisi actionem alienatam vasculorum
 "minimorum corii sequuntur, neutiquam inter Aethiopes
 "tantum verum etiam passim inter nostrates occurrunt;
 "mihique ipsi bina istiusmodi exempla in Germanicis
 "hominibus observandi occasio fuit, alterum viri juvenis,
 "alterum senis sexaginta et quod excurrit annorum.
 "Utrique cutis subfusca hinc illinc maculis diversae
 "magnitudinis candidissimis distincta: quae vero neutri
 "connatae, sed isti infantili aetate, huic contra virili sen-
 "sim et sua sponte subortae fuerant*."

SECTION VII. DIURETICS.

I HAVE little to say under this head. I believe, however, that it is a fact, that several of our indigenous vegetables, of which no notice has been taken in the preceding part of the *Collections*, are very powerful Diuretics: but my knowledge of these plants is, as yet, very imperfect.

* De Generis Humani varietate nativa, &c. p. 154. 155. Gottingae : 1795.

THE *Erigeron Philadelphicum*, or Philadelphia Flea-Bane, is one of the most common plants in many parts of the United-States. A decoction or infusion of the plant has been used in Philadelphia, by several persons, for gouty and gravelly complaints, and some of them have informed me, that they have been much benefited by the use of the plant*. It operates powerfully as a diuretic, and also as a sudorific. This *Erigeron* is known in Pennsylvania by the name of Skevish, which I suspect is a corruption of the word Scabious. But it must be confessed, that the genera *Scabiosa* (Scabious) and *Erigeron* are sufficiently remote from each other.

I HAVE never employed the *Erigeron Philadelphicum*, in practice: but I am led to believe, that there is *some* foundation for the assertions which I have noticed, because I find that the same plant is mentioned by Father Loureiro, as one of the remedies that are employed by the people of Cochinchina; and he speaks of it as an active emmenagogue†.

IN Virginia, there is a plant called "Piss-wort," which is deemed a very powerful diuretic. I am unacquainted with the plant, which, however, has been mentioned to me by a respectable physician, who informs me, that he once saw a strong decoction of it given to a horse, labouring under strangury, with the effect of suddenly exciting a very copious flow of urine. Perhaps, it will be found that this plant is a species of *Menispermum*, or Moonseed, of which genus there are several species indigenous within the limits of the United-States.

* See Elements of Botany, &c. Part Third. p. 123.

† Flora Cochinchinensis, &c. Tom. II. p. 500. Ulyssiponæ: 1790.

SECTION VIII. ANTILITHICS.

BY this term of ANTILITHICS, I mean those medicines which give relief in the disease of *lithiasis*, or calculus, and also in nephritis when this depends upon the same causes that induce calculus, such as a gouty diathesis, not to mention others. I prefer this term to the old one of LITHONTRIPTICS, which has so generally been employed to denote a set of medicines which produce the effects I have mentioned. Lithontriptics, in the rigid sense of this term, are, I think, unknown to us; though I do not deny, that the long-continued use of lime-water and other similar medicines, may on some occasions, have acted partially by dissolving, or otherwise altering, the surface of urinary and other calculi. Meanwhile, we are certain, that in many instances where Uva Ursi and other medicines have greatly relieved the distressing symptoms induced by calculus, the latter has remained undissolved, and its form, perhaps, not in the least, altered.

THE real mode of operation of the Antilithics is unknown to us. It seems highly probable, however, that many of them produce their effects by virtue of an astringent quality. We, at least, find that not a few of the astringents, such as Uva Ursi*, some species of Geranium, &c., do give relief in many cases of nephritis and calculus†. Dr. Cullen imagines, that the astringents act, in this case, by absorbing an acid in the stomach‡. But this appears to be a frivolous theory,

* See page 3.

† J. H. Heucher.

‡ A Treatise of the Materia Medica. Vol. II. p. 13, &c.

unsupported by any respectable body of facts. The mode of operation of the astringents, is not completely understood; and in ascertaining the fact, that these medicines are antilithics, we have only advanced one step towards the discovery of truth. But whatever may be the precise manner of acting of the astringents in cases of nephritis and calculus, we are certain, that an antilithic property belongs to many articles which have little or no claim to the character of astringents. Such are some of the plants of the genus *Allium*, or Garlic, as the Leek (*Allium Porrum*), &c.: also carbonic acid, and carbonate of soda, not to mention several others.

It is much to be regretted, that this most important subject should still be involved in so much uncertainty, notwithstanding the late laborious and ingenious inquiries of Fourcroy, Pearson, and other philosophers, who have favored us with the results of their experiments, relative to the analysis of human and other calculi. But on this subject much remains to be done; and although it is not probable, that we shall soon, if ever, discover a *solvent* for calculi in the body, it is highly likely, that a more extensive and correct acquaintance with the intimate nature of these concretions, will, in time, conduct us to a knowledge of the means of *preventing* their formation.

I HAVE but little to say on the subject of particular Antilithics. Indeed, it must be confessed, that our catalogue of articles that are deserving of this title is very small.

OF the *Uva Ursi*, I have already taken some notice*. I have also observed, that the *Pyrola umbellata* has been

* See Part First, p. 9, 10 See also page 3, of the present part.

employed with advantage in nephritic affections*. The good effects of the kernels of *Corylus Americana* have been noticed†, as have those of the Philadelphia Flea-bane, or *Erigeron Philadelphicum*‡. I have not, however, employed any of these articles in the disease of nephritis, except the *Uva Ursi*, which is, unquestionably, a valuable antilithic. I have often prescribed this medicine, and have known it to be useful, even when it was ascertained that a calculus was present. It is certain that it does relieve the disagreeable symptoms which are the consequence of the irritation of a stone; and some facts which have come under my own observation, independently on those which I have met with in medical authors, have led me to believe, that the use of this astringent medicine facilitates the expulsion of calculous granules, through the urethra. In what manner this effect is accomplished, I am unable to say. I must add, however, that in *some* nephritic cases, *Uva Ursi* seems to increase the irritation which it so *generally* relieves.

I HAVE already observed, that the root of *Convolvulus panduratus* "has been much recommended in cases of "gravel§." Since the publication of the former part of the *Collections*, I have received some additional and more certain information on this subject. In particular, I have learned, that an infusion or decoction of the root has been often used by a physician¶ of New-Jersey, who has found the medicine very useful in his own case. He is persuaded, that it has enabled him to pass the calculous granules, with much facility.

* See p. 2, 3.

† See p. 3.

‡ See p. 46.

§ See Part First, p. 54.

¶ Dr. Harris.

SECTION IX. ANTHELMINTICS.

It has been asserted, that Worms, as constituting a disease, are more common in America than in Europe. I suspect that there is some foundation for this assertion, though I am sensible, that the assertion ought to be received with some hesitation. A larger body of facts should be collected, before the truth can be completely established.

I HAVE already observed, that the Indian children, in some parts of the United-States, are very "subject to worms, and to the *larvæ* of insects, introduced into the system, along with their crude, and often unwholesome, aliment*." It is, moreover, a fact that great numbers of these children fall victims to the diseases induced by worms. This is acknowledged by many of the Indians with whom I have conversed. The Oneidas preserve a very curious tradition concerning one of these epidemick worm-fevers, and inform us, that in consequence of the destruction which it occasioned among their children, the nation relinquished a station which it had long occupied, on the margin of the Oneida-Lake, and took possession of another, at some distance from the Lake. It has, however, been asserted by some ingenious writers, that diseases from worms are unknown among the Indians†. My own observations and inquiries lead me

* See Part First, p. 37, &c.

† Dr. Rush says, he "cannot find any accounts of diseases from worms, among the Indians." "Nor does dentition (he observes) appear to be a disorder among the Indians. The facility with which the healthy children of healthy parents cut their teeth, among civilized nations, gives us reason to conclude, that the Indian children never suffer from this quarter." See An Oration, &c., containing an Enquiry into the Natural History of Medicine among the Indians of North-America, &c. &c. p. 26. Philadelphia: 1774.

to adopt a very opposite opinion. Indeed, the children of the Indians seem to suffer not much less from worms, and from dentition, than the children of the Europeo-Americans.

WHATEVER foundation there may be for the assertion, that worms are peculiarly common in North-America, it will not be denied, that the subject of Anthelmintic medicines is one well worthy of attention. On this account, I shall introduce into this place a few additional notices on the subject. I begin with those vegetables which are most obviously characterized by a tonic quality.

A STRONG decoction of the bark of the *Prunus Virginiana** has been employed, with a good effect, in some cases of worms. Whether this bark operates by any other than by a tonic quality, I am unable to say. It will not be denied, that many of the bitter tonic medicines are, on many occasions, excellent anthelmintics. But I am very far from believing, with some ingenious writers†, that the tonic medicines are always the best anthelmintics. In the epidemic verminose fevers, which often prevail in the marshy tracts of country, and are evidently owing to the same causes that induce common intermittents and remittents, the Peruvian bark and other similar medicines may be used with peculiar advantage. Moreover, tonics are at all times properly exhibited, with a view to prevent worms from increasing in the system. But many articles that are not at all, or at least very inconsiderably, tonic, are among the most valuable anthelmintics with which we are acquainted.

* See p. 21, 22.

† Mr. James Moore. "Bark (says this author) is perhaps the best of all worm-powders." *An Essay on the Materia Medica*, &c. p. 148. London: 1792.

THE *Veratrum luteum**, commonly called Devil's bit, and BlazingStar, is entitled to notice. The root of this plant is a very pungent bitter, and is employed as a tonic, in some parts of the United-States. A spirituous infusion of the root is made use of. A tea, or watery infusion, of the root is often used, and is deemed an excellent anthelmintic. I presume, it does not operate merely by virtue of its bitter or tonic property. A narcotic quality seems to belong to this vegetable, and I am inclined to think, that its good effects, in cases of cholic, and perhaps, in cases of worms, are, in part at least, owing to this quality.

A WATERY infusion of the twigs and leaves of the *Laurus Benzoin*, formerly mentioned†, is often given to children, with a view to destroy and dislodge worms, and is deemed an efficacious medicine in this case.

THE root of the *Sanguinaria Canadensis*, exhibited with a view to its emetic effect, has, in some instances, dislodged worms from the stomach. Future experiments must determine, how far this active article is entitled to the character of an anthelmintic. Perhaps, *Ipecacuanha*, or any other emetic, would be found equally beneficial, in similar cases.

IN the course of my journey through Virginia, in the year 1802, I was informed, that the *ripe* fruit of the *Per-simmon* (*Diospyros Virginiana*‡) has often been found very useful in the worm-cases of the negro and other

* I take this plant to be the *Melanthium dioicum* of Walter. See my *Elements of Botany*, &c. Part Third, p. 157, &c.

† See Part First, p. 20.

‡ See Part First, p. 11.

children. I cannot discover any thing peculiarly active in this fruit, in the condition in which it is employed as an anthelmintic. Perhaps, it operates solely by virtue of a laxative property.

I CONTINUE to use and experience the good effects of the *Melia Azedarach**. I believe this is one of the most valuable anthelmintics, that has hitherto been discovered. Of late, the dried berries have been advantageously employed as an anthelmintic, in Carolina. With a view to this effect, children are permitted to eat the berries, without any particular regard to the dose. They are, by some, deemed as efficacious as the bark of the tree. I have employed the powdered leaves, but am not yet prepared to offer a positive report concerning their comparative powers. On the subject of the anthelmintic and other properties of the *Melia*, the reader will do well to consult my friend, Dr. G. Duvall's Inaugural Dissertation †.

* See Part First, p. 39, 61, 62, 63.

† An Experimental Botanico-Medical Essay on the *Melia Azedarach* of *Linnaeus*. By Grafton Duvall, of Maryland. Philadelphia: 1802.

THE END.

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